



HDL CR-76-212-1 -V01-2 S AD A O 4 0 8 7 ENVIRONMENTAL TESTING OF A FLUIDIC DIGITAL-TO-ANALOG CR-76-212-1, Environmental Testing of a Fluidic Digital-to-Analog Converter, Volume II, by George W. Roe CONVERTER. VOLUME I. Danial rept. MDC-LØ356-V61-2 Prepared by McDonnell Douglas Astronautics Co. Titusville, Florida 32780 **Under Contract** DAAG39-76-C-1212 16 17162114A644 U.S. Army Material Development and Readiness Command HARRY DIAMOND LABORATORIES Adelphi, Maryland 20783 APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED 405540

REDUCED DATA FROM ENVIRONMENTAL TESTING OF A FLUIDIC DIGITAL-TO-ANALOG CONVERTER

SUBMITTED UNDER CONTRACT NUMBER DAAG39-76-C-0212

JULY 1976

MCDONNELL DOUGLAS

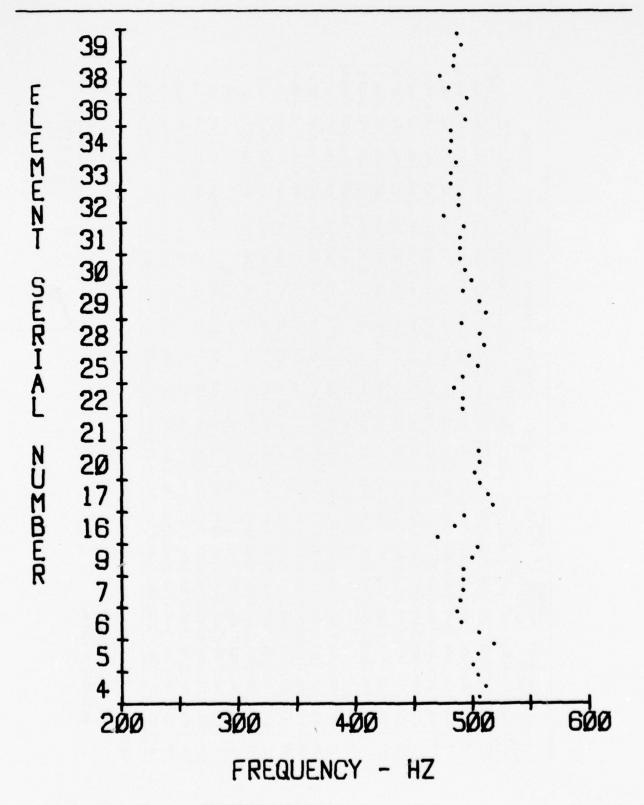
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	2	IST TEST AFT	FTER	VARIANCE PRESSURE 40 PSI ON	VARIANCE IN PRESSURE (D) 40 PSI ONLY		SCHMITT TRIGGER		BASELINE	¥	BASE	BASEL INE	BASELINE F-2	EL INE	BASEL INE	SEL INE	80	BASEL INE	w	
159c+		542 - 604	04	605	996 -	1009	- 1050		1093 -	1155	1156	- 1260	1272	- 1376	1377	- 1481	14	1482 - 1544	544	
N/S	1	2	3	-	2	_	2	-	2	6	-	2	1	2	1	2	-	2	3	AVG
4	505.8	510.8	505.8 510.8 504.2	465	466.3	466.3 462.5	5 477.5	5 465.8	8 466.	466.7 466.7 461.2 460.8 470.8 467.5 448.3 450	461.2	460.8	470.8	467.5	448.3	450	443.3	454.2	443.3 454.2 464.2	469
2	200	504.2 5	518	487.5	487.5 477.1 465	465	485.8	8 480	485	485	464.2	460.8	464.2 460.8 489.2 470.8 457.5 463.3 466.7 465.8 465.8	470.8	457.5	463.3	466.7	465.8	465.8	478.5
9	505	490	486.7		465.8 462.5 460	460	461.	7 464.	2 463.	461.7 464.2 463.3 462.5 462.5 454.2 468.3 465	462.5	454.2	468.3	465	451.7 450	450	457.5	457.5 455.8 450	450	465.1
7	489.2	489.2 491.7 4	491.7	465.4	481.7	471.	7 460.	8 460.	8 461.	481.7 471.7 460.8 460.8 461.7 454.2 452.5 445.8 453.3 466.7 446.7 453.3 450	452.5	445.8	453.3	466.7	446.7	453.3	450	447.5	447.5 440.8 462.4	462.
6	492.5 500	200	504.2	464.2		473.3 455.8	8 460.	8 457.	5 462.	460.8 457.5 462.5 463.3 450	450	452.5	452.5 457.5 464.2 445.8	464.2	445.8	445.8 450	450	450	450	463.2
9	470	485	493.3		476.7 465.8 460.8	460.	8 463.	463.3 465		464.2 462.5 458.3 462.5 479.2 468.3 464.2 465	458.3	462.5	479.2	468.3	464.2	465	462.5	456.7	462.5 456.7 456.7	467.4
1	518.3	518.3 513.3 5	506.7	200	501.7 485	485	494.2		473.3 475	471.7	487.5	488.3	471.7 487.5 488.3 509.2 499	489	487.5 490	490	482.5	479.2	482.5 479.2 469.2	491
20	501.7	501.7 506.7 5	505.8	485.8	490.8	490	200	494.2	2 485	485.8	486.7	485.8	485.8 486.7 485.8 489.2 483.3 490.8 493.3 486.7 480.8 483.3 490.8	483.3	490.8	493.3	486.7	480.8	483.3	490.
12		•	•	•		378.3	3 363.3		362.5 360.8 345	345	511.7 515	515	515.8	515.	513.3	513.3 515.8	509.2	509.2 501.7 500	30	510.8
22	491.7	492.5	491.7 492.5 484.2		466.7 494.2 487.5 483.3 495	487.	5 483.	3 495	477	477.5 494.2 482.5 480.8 470.8 474	482.5	480.8	470.8	474	490.8 485	485	485	479.2	479.2 472.5	483.5
52	492.5 505	505	497.5	97.5 494.2 487.5 465.8 476.7 477.5 475	487.5	465.	8 476.	7 477.	5 475	479.2	467.5	468.3	479.2 467.5 468.3 485.8 469.2 468.3 464.2 469.2 464.2 468.3	469.2	468.3	464.2	469.2	464.2	468.3	477.7
28	510.8	510.8 506.7	490.8	487.5	487.5 494.2 481.7	481	7 486.	486.7 500	495	20	484.2	478.3	484.2 478.3 493.3 488.3 491.7 483.3 484.2 480.8 482.5	488.3	491.7	483.3	484.2	480.8	482.5	490.5
53	512.5	512.5 506.7 4	492.5	92.5 469.2 477.2 487.5 480	477.2	487.	5 480	501.	7 493.	501.7 493.3 498.3 483.3 470.8 470.8 485	483.3	470.8	470.8	485	468.3 480	480	490	493.3 500	200	487.4
30	200	494.2 4	490	200	493.3 475	475	466.	7 496.	466.7 496.7 490.8 498	86	470	470.8	470.8 468.3 469.2 470.8 469.2 494.2 491.7 493.3	469.2	470.8	469.2	494.2	491.7	493.3	484.3
31	490	490	493.3	93.3 477.5 491.7 466.7 475	491.7	466.	7 475	491.	491.7 490	508.3	508.3 464.2 465	465	470.8 470	470	464.2	465.8	480.8	485.8	464.2 465.8 480.8 485.8 487.5 480.4	480.
12	476	489.2	489.2	482.5	200	•	'	525.	5 505.8	522.5 505.8 516.7			477.5	477.5 479.2	•	•		'	•	493.9
13	481.7	482.5 4	486.7	488.3	482.5	6 477.	5 483.	3 505	488.3 482.5 477.5 483.3 505.8 512.5 505	202	468.3	462.5	468.3 462.5 480.8 466.7 475	466.7	475	468.3	481.7	481.7	468.3 481.7 481.7 487.5 483.1	483.
34	481.7	482.9	482.9 482.5	489.2	493.3 465	465	480	480.8 492.5	5 505.8	8 510.8	458.8	465.8	510.8 458.8 465.8 468.3 465	465	464.2	464.2	485.8	489.2	464.2 464.2 485.8 489.2 469.2	479.7
99	495	487.5	496.7	484.2	493.3	477.	5 487	5 511.	7 514.	484.2 493.3 477.5 487.5 511.7 514.2 507.2 482.5 475	482.5	475	479.2	479.2 470.8 489.2 477.5 500.8 490.8 497.5 490.4	489.2	477.5	500.8	490.8	497.5	490
88	480.8	480.8 472.8	485	466.7	466.7 468.3 465.8	465.	8 465.8	8 481.	7 494	481.7 494.2 481.7 460.8 468.5 460.8 456.7 462.5 460.8 468.3 467.5 469.2 470.4	460.8	468.5	460.8	456.7	462.5	460.8	468.3	467.5	469.2	470.
39	485	491.7	487.5	489.2	491.7 487.5 489.2 483.3 487.8 485	487	8 485	200	505.8	505.8 512.5 469.2 467.5 470	469.2	467.5	470	501.7	501.7 465.8 475	475	481.7	479.2	481.7 479.2 479.2	485.1

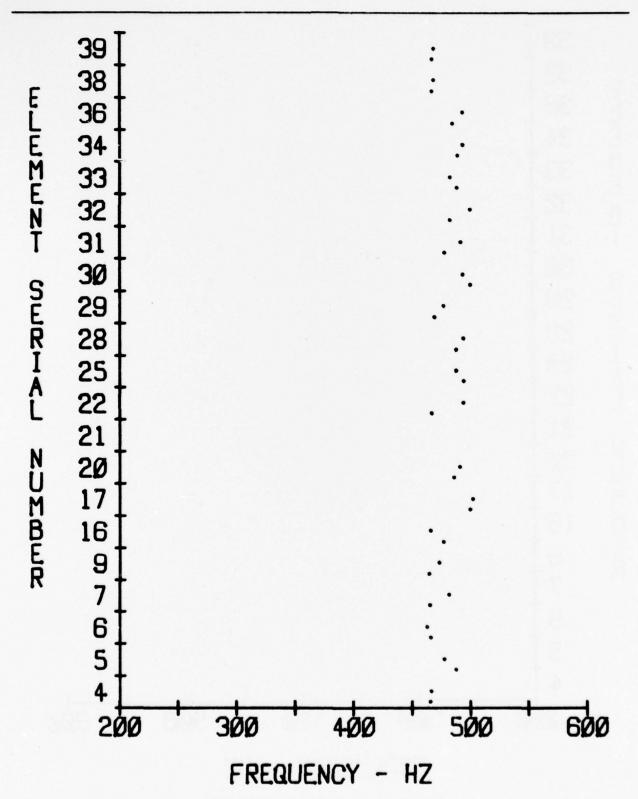
*UNIT 21 WAS NOT INITIALLY WORKING. UNIT STARTED TO WORK AND WAS THEN TUMED. AVG. IS FOR LAST 9 TESTS ONLY.

INDICATES HIGH READING INDICATES LOW READING

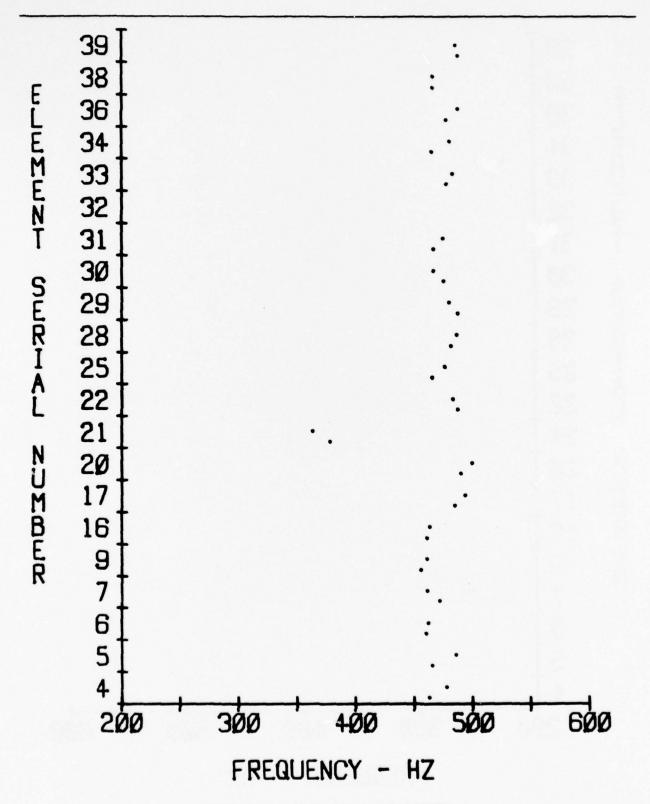




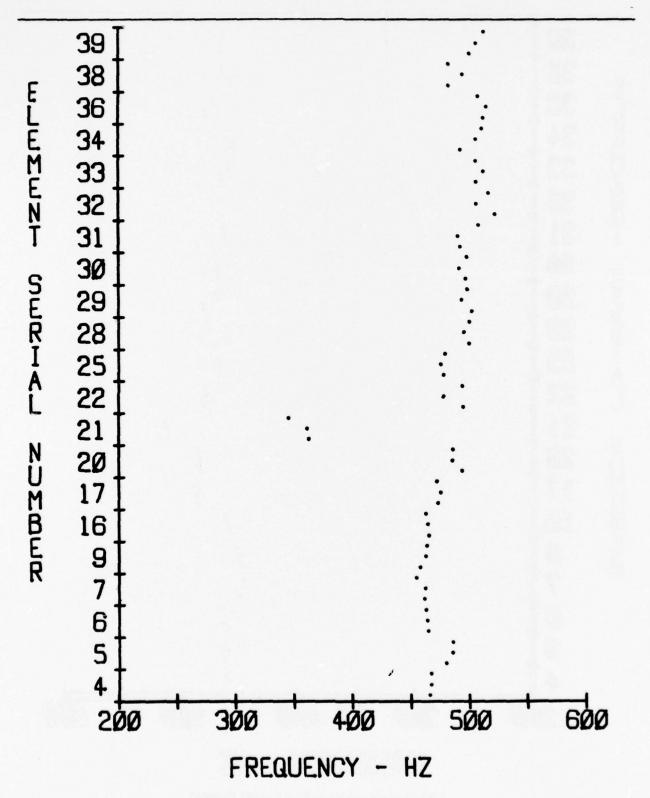
FREQUENCY VARIATION AT +5PSI, FIRST BASELINE AFTER ENVIRONMENTAL CHAMBER TUNING. REFERENCE TASK C



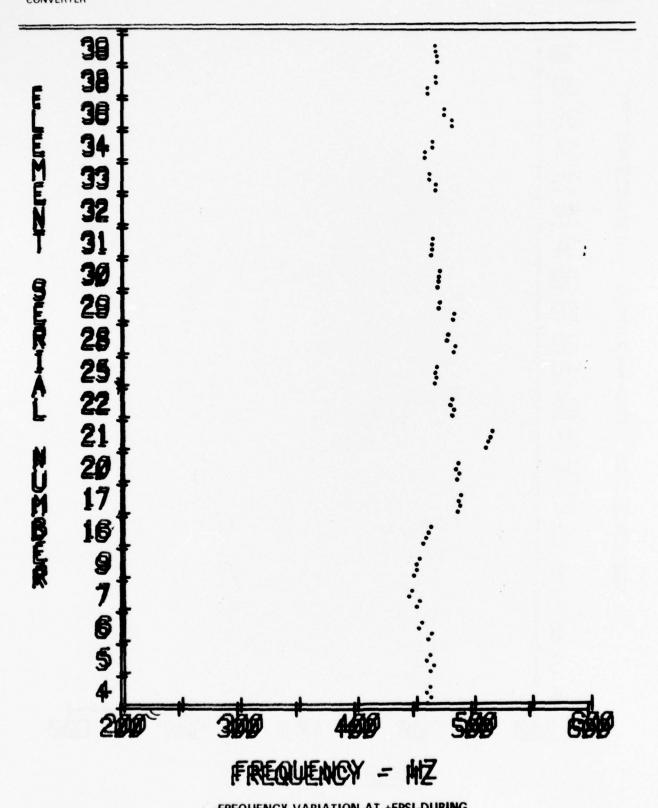
FREQUENCY VARIATION AT +5PSI DURING VARIANCE IN SUPPLY PRESSURE TEST. (THIS DATA AT A SUPPLY PRESSURE OF 40PSI) REFERENCE TASK D

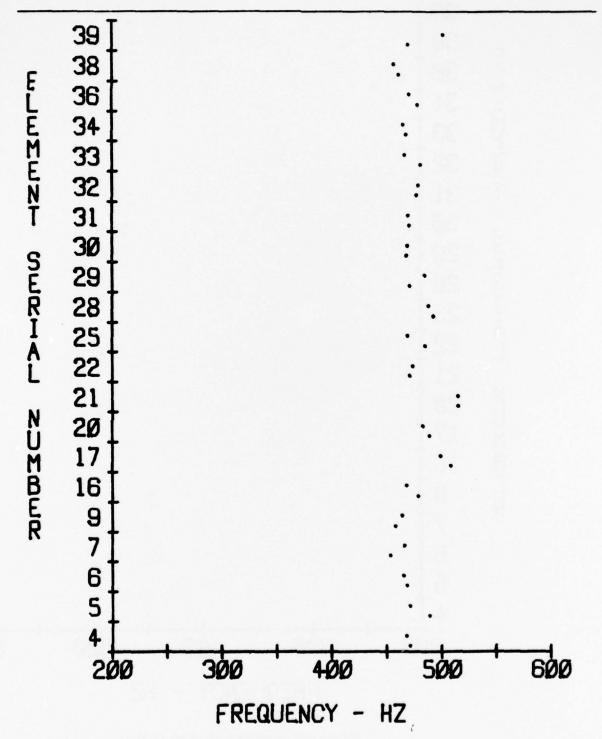


FREQUENCY VARIATION AT +5PSI DURING SCHMITT TRIGGER TEST. REFERENCE TASK D

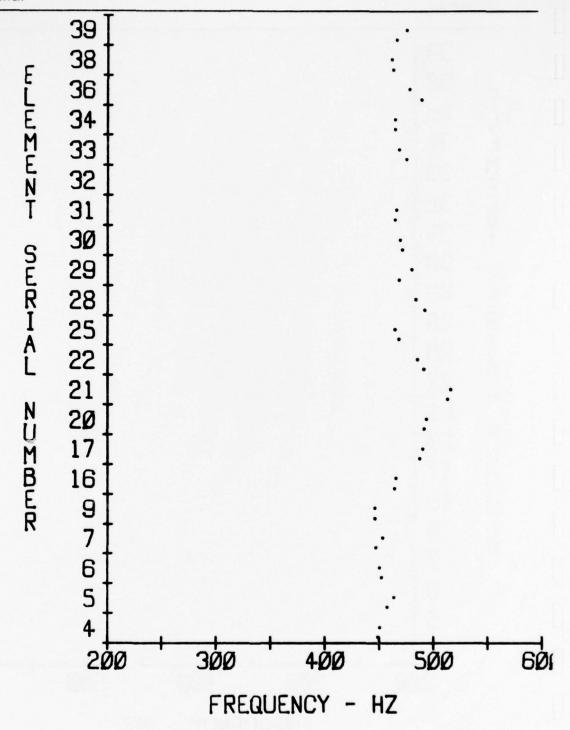


FREQUENCY VARIATION AT +5PSI BASELINE TEST PRIOR TO STEP PULSING. REFERENCE TASK D

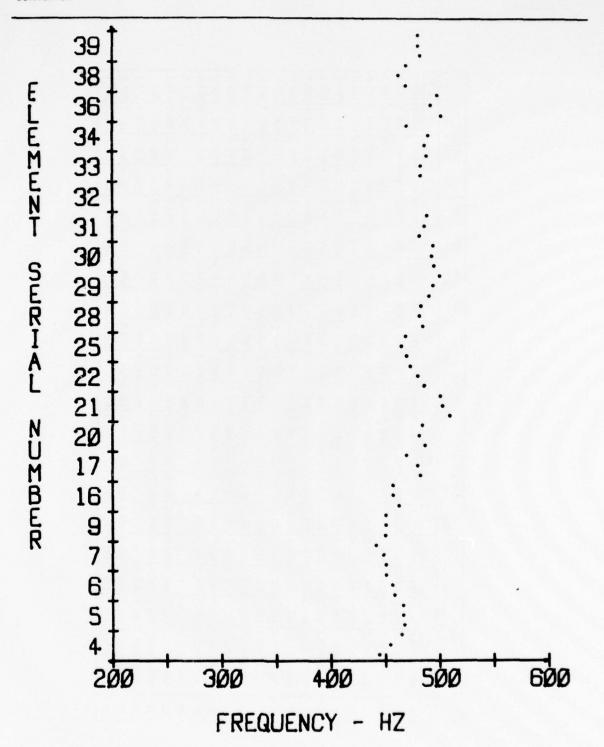




FREQUENCY VARIATION AT +5PSI DURING SECOND STEP PULSE BASELINE TEST REFERENCE TASK E-2

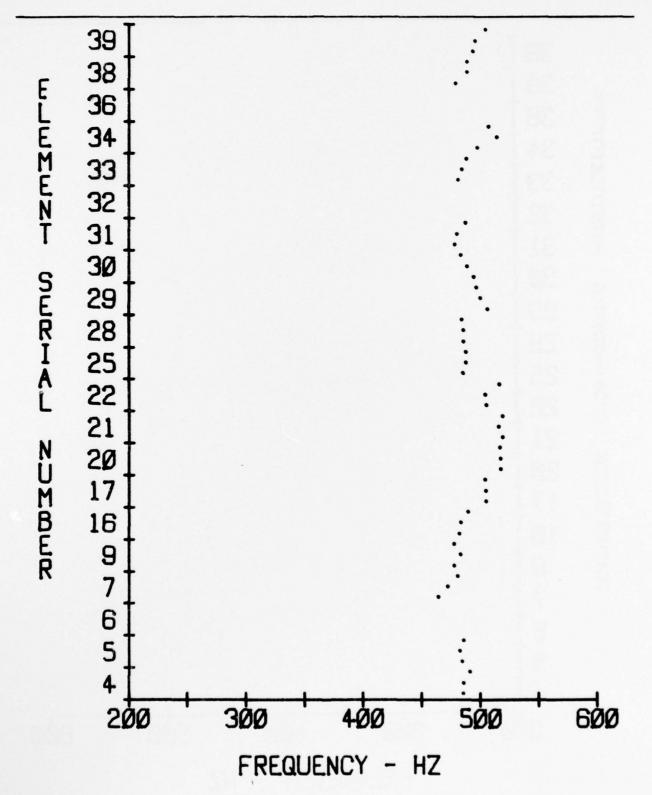


FREQUENCY VARIATION AT +5 PSI DURING THIRD STEP PULSE BASELINE TEST, REFERENCE TASK E-3

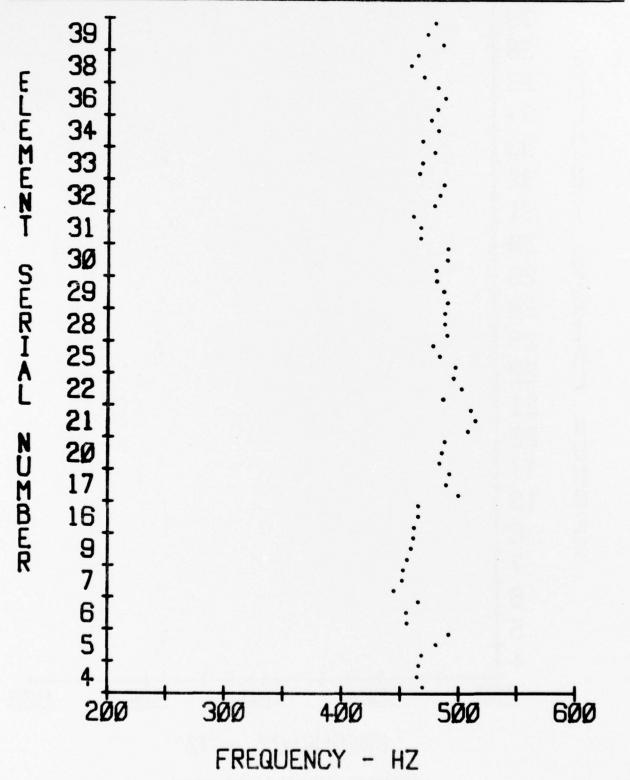


FREQUENCY VARIATION AT +5PSI DURING BASELINE TEST PRIOR TO HIGH TEMPERATURE ENVIRONMENT: REFERENCE TASK F-1

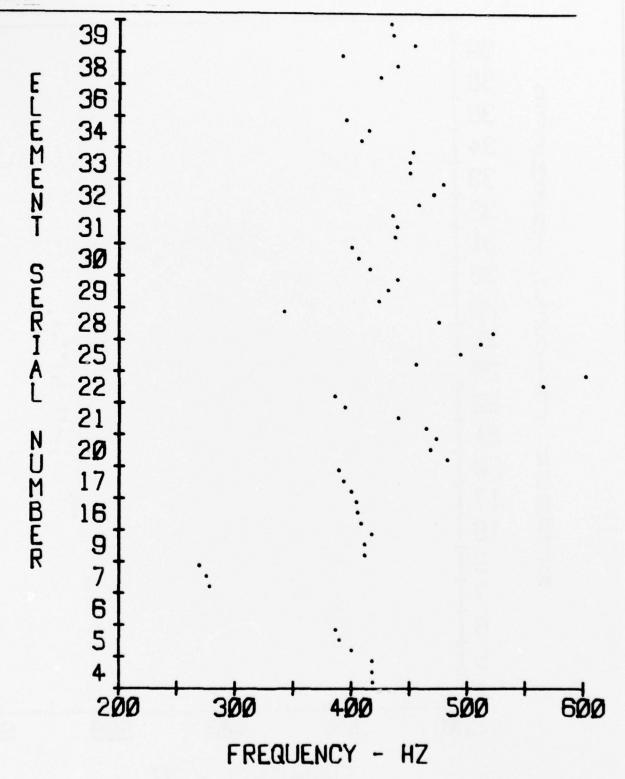
	-	-									-								-			_
	AVG	460.3	462.5	482.7	500.6	514.2	493.2	530.4	521.9	542.8	537.5	542.2	538.7	549.4	552.2	474.4	512.5	499.7	200	514.7	492.5	504.4
BASELINE F-5 1746 - 1808	3	8.064	468.3	473.3	200	510	490	530.8	522.5	540	539.5	543.3	544.2	558.3	562.5	495.8	512.5	502.5	200	519.2	491.7	502.5
BASEL I 1746 -	2	475	460	507.3	200	514.2	483.7	530.8	522.5	543.3	535.8	545.8	535.8	548.3	554.2	472.5		498.3	200	510	493.3	805.8
	_	475	459.2	467.5	501.7	518.3	495.8	529.7	520.8	545	537.5	537.5	_	541.7	540	455	,	498.3	200	515	492.5	505
**	AVG	8	6.	4	2	413.8 5	00	2	474.9 5	00	517.7 5	6	6.4 536	9.	.2	.2	4.69.4	450.8 4	-	- 2	418.7	440.8
F F-4	A	5 417	3 391		2 274		.2 405	2 394	3 47	2 432		7 486.	7 446.	431	407	437		. 5 45	406		7 418	3 44
-40°F - 1745	8	417.5	386.	1	269.2	418.3	404	389.	473	394.	601.7	511.7	341.7	440	400	435	479.2	452.	395	'	391.	433.3
TEMP.	2	417.5	389.5		275	411.3	405	393.3	468.3	440	565.5	494.2	475	431.7	405.8	439.2	470.8	450	415		439.5	435
MOT	-	418.3	400	,			408.3		483.3	464.2	385.8	455	5	-		.5		450	408.3	,		154.2
	AVG	466.4	480.3	459	449.5 278-3	458.6 411.7	463.9 4	493.6 400	485.3 4	510.8	494.6	485.8	488.3 522	485.7 424	486.7 415.8	464.6 437	483.1 458.3	471.14	475	483	464.2 463.9 425	479.2 478.9 454.2 435
INE F-3 - 1664	3	465.8 4	491.7	465.8 4	452.5 4	460.8 4		491.7 4	487.5 4	510 5		477.5 4	487.5 4	480.4		460.4	486.7 4	479.2 4		480.8 4	4.2 4	9.5 4
	_			4			465.3 465	489.2 49		2	.5 495	3	5	1	490		483.3 46	3	481.7 475	S	458.3 46	471.7 47
BASE 1602	2	2 464.2	3 480.8	8 455.	2 451.7	8 459.2		489	3 485	3 514.	3 502	7 483.	487	486.	490	7 466.7		8 468.		8 487	2 458	.8 47
	-	469.	468.3	455.8	444.2	455.8	461.	200	483.	508	486.	496.	490	480	480	466.7	479.2	465.8	468.3	8.08	469.2	485
F-2	AVG	487.5 469.2	484.2	•	472.4	479.4	485.3 461.3	504.6 500	517.5 483.3	518.1 508.3	508.6 486.3 502	486.8 496.7	485.3 490	501.1 490	488.8	481.8	,	484.3	506.1	,	485.3	497.5
+145°F	3	490.8	485.8	,	480.8	177.5	490	504.2	516.7	519.2	516.7	487.5	484.2	496.7	483.3	487.5	,	487.9	506.7	,	488.3	504.2
TEMP. +	2	485.8	482.5	,	472.5	483.3 477.5	483.3	504.6	517.5	515.8	504.2	487.5	485.8	200	88.8	084	,	484.2	514.2		88.8	495
HIGH T	-	485.8 4	484.2 4		463.8	477.5 4	482.5	505 5	518.3 5	519.2 5	505 5	485.4	485.8	506.7 5	494.2	477.9	,	480.8	497.5	,	478.8	493.3
	AVG	453.9 48	466.1 4	454.4	446.14		9	6	483.6 5	503.6	6	2.	2	494.4 5	493.1 4	484.7 4		483.6 4	481.4	4.96.4	468.3 4	480 4
F-1	3 A	464.2 45	80		œ	450	456.7 458.	469.2 476.	m		2.5 478.	468.3 467	2.5 482.		493.3 49	30		3	469.2 48	5.	469.2 46	479.2 48
BASELINE F-1	-	.2 464	8 465.	8 450	5 440.	450			8 483	7 500	2 472.		8 482	3 200	.7 49	8 487		7 487		8 497	2	2 47
WA	2	454	465.	455.	447.	450	456.7	479.2	480	501.7	479.2	464.2	480.8	493.3	491	485	'		489.2	490.8	.3 467	479.2
BASE 1482	_		-	S			S	S	7.	2.		2.	2.		1.2	80		1.	00	00	.3	481.7
	-	443.3	466.7	457.	450	450	462	482	486.	809	485	469	484	490	494	480.	•	48	485	500	468	84
Test BASI 148	S/N 1	4 443.3	5 466.7		7 450	9 450	16 462.	17 482	20 486	21 509	22 485	25 469	28 484	29 490	30 494	31 480	32	33 481	34 485	36 500	38 468	39 48



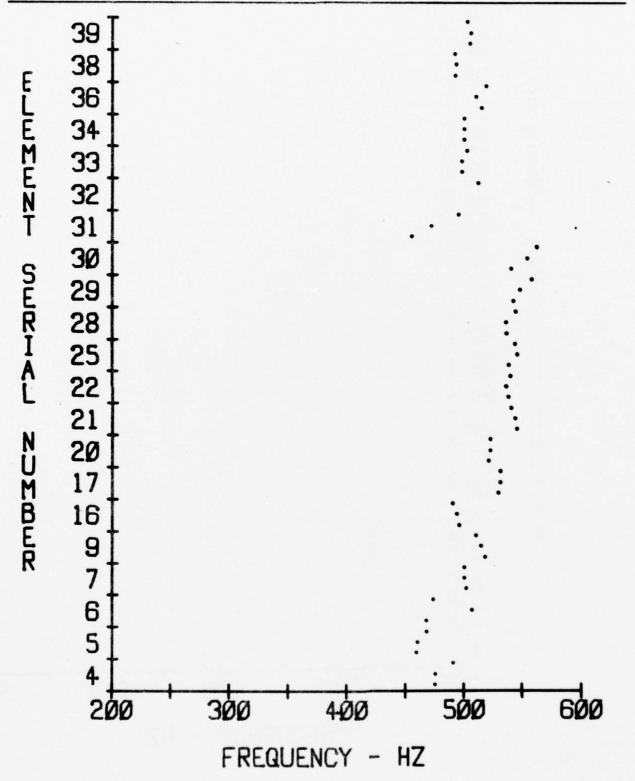
FREQUENCY VARIATION AT +5PSI DURING HIGH TEMPERATURE (+145°F) ENVIRONMENT REFERENCE TASK F-2



FREQUENCY VARIATION AT +5 PSI DURING BASELINE PRIOR TO LOW TEMPERATURE ENVIRONMENT: REFERENCE TASK F-3



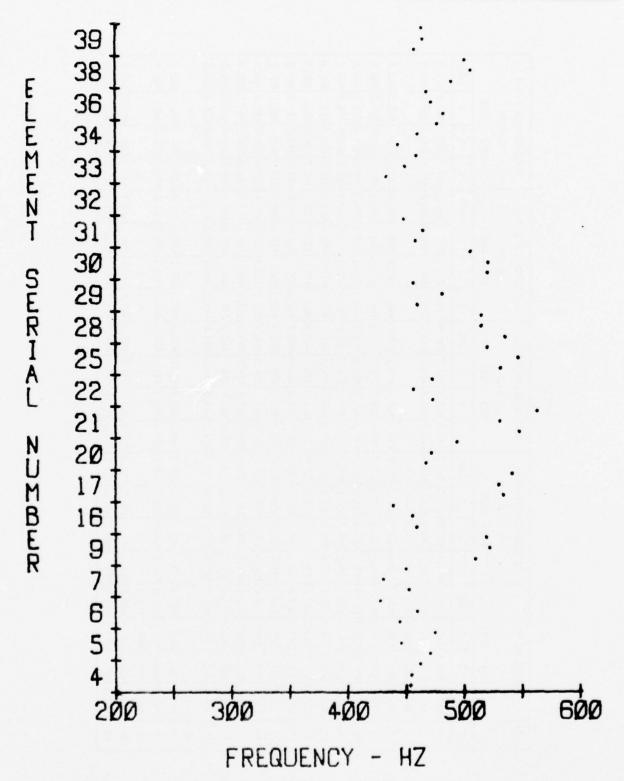
FREQUENCY VARIATION AT +5 PSI DURING LOW TEMPERATURE (-40°F) ENVIRONMENT, REFERENCE TASK F-4



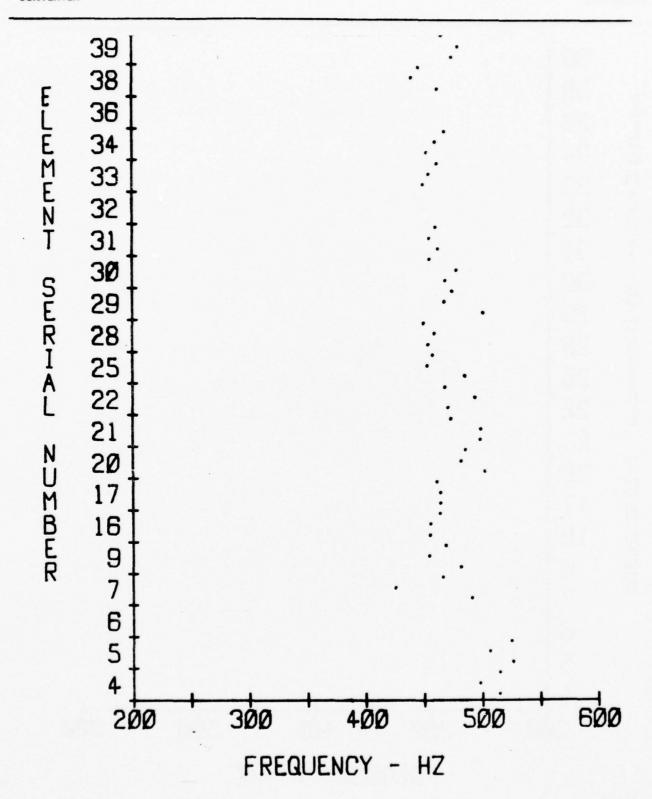
FREQUENCY VARIATION AT +5PSI DURING BASELINE TEST USING N₂ (AFTER LOW TEMPERATURE TESTING) REFERENCE TASK F-5

-7-4			AVG	5 467.8	7 467.5	,	3 444.6	7 458.1	453.5	8 469.2	485.8	485.2	462.5 467.8 467.5 464.7 470.8 467.7	466.7 465.8	8 456.6	465.4	5 445.8	7 445.6		5 438.1	444.4		5 434.2	450 B
ACCELERATION F-7-4	X15	5089	6	462.5	466.7	'	436.3	451.7	445	470.	2 200	485	470.	466.	3 435.8	457	452.5	451.7		441.7 437.5	440		417.5	450
ELERAT	+3 AXIS	2043 -	2	459.2	450	•	435	471.7	471.3	2 467.5	468.3	486.2 484.5	464.7	449	8 468.3	460	444.2	440.8	,	441.7	432.5 460.8	•	450	3 450 2
ACC			-	481.7	485.8	,	462.5	451	444.2	469.2	489.2	486.2	467.5	481.7	465.8	479.2	440.8	444.2		435	432.5		435	2 2 7
٠-			AVG	432.5 441.1 481.7 459.2	450.6	,	443.6 462.5 435	457.2 451	450.7 444.2 471.3 445	477.5	483.3 489.2 489.2 468.3	491.7 487.2	8.79	455.8 449.7 481.7 449	447.6	463.9 479.2	461.1 440.8 444.2	433.3 446.3	,	4.14	461.6		448.1 435	ASS S
7-4 NC	SI	2042	3	432.5		,	450		443.8	479.2	483.3	491.7	462.5	455.8	452.5 447.6			433.3	,	138.3	165.3	,		470 A
ACCELERATION F-7-3	Ä	- 9861	2		146.7	,	420.8 450	469.5 450	2.69	8	177.5	485				8.59	441.7 467.5	162.5	,	141.7	63.3	,	136.7	445 8
ACCEL		15	-	140.8	454.4 439.2 446.7 465.8				39.5	472.5 480.	477.1 506.7 477.5		155.8	460.7 443.3 450	156.7 4	8.09		143.2		144.2	461.1 456.3 463.3 465.3 461.6	,	157.5	
2			AVG	56.9	54.4 4	,	35.6	58.9	51.7	8	77.1 5	490.6 485	63.2	60.7	56.1	73.9	462.7 474	43.6	,	53.9	61.1		48.9	464 7 450
ACCELERATION F-7-2	J. 1	1985	3	3 455.8 466.7 456.9 440.8 450	460.8 4		429.2 435.6 460	478.3 452.7 458.9 452	452.5 451.7 439.2 469.2	468.3 472.	484 4		470.8 460.8 463.2 455.8 485		455.5 456.1 456.7 433.7	481.7 487.5 462.5 471.7 473.9 460.8 465.8 465		443.3 443.6 443.2 462.5	,	455.8 464.2 441.8 455.8 453.9 444.2 441.7 438.3 441.4	455 4	,	446.7 449.7 453.3 451.2 439.2 448.9 457.5 436.7 450	470 4
ERATIO	8	1929 - 1	2	55.8	7 435.8 4	ı	452.5	78.3	59.2	474 4	474 4	471.7 495	70.8	461.2 470	451 4	62.5	69.2 4		,	41.8		,	54.2	55 B 4
ACCEL		19	-	48.3 4	466.7 4	,			43.3 4	476 4	473.3 4				61.7	87.5 4	63.8 4	23.3 4		64.2 4	469.2 459.2	,	53.3 4	468 3 455 B
_			AVG	509.2 448.	519.3	,	466.7 460.8 425	469.2 468.4 445.8	458.3 443.3 459.2	463.1 4	90.1	473.3 490.4 505	468.2 477.8 458	453.3 458.3 465.8 451	454.7 461.7	81.7 4	468.1 463.8 469.2 455	459.7 423.3 464.2		55.8 4	460.9	,	49.7	473 6 4
1 F-7-	5	1928	3	515.3 5	525 5	,	56.7 4	59.2 4	54.2 4	460.8 4	485.8 490.1	73.3 4	58.2 4	58.3 4	450 4	475 4	455.8 4	460.8 4	,	462.5 4	469.2 4	,	46.7 4	465 8 4
RATIO	Ā		2	497.5 5	506.3 5	,			455.8 464.2	464.2 46	1		494.2 40	3.3 4		8.34	479.2 4				460.8 46			
ACCELERATION F-7-1		1872	-	514.7 49	1		490.8 425	481.7 454.2		2	502.8 481	6 466	470.8 49	8	4.2 460	501.7 468.3	469.2 47	3.3 455	,	0 455	œ	,	2.5 440	480
		-	9		.6 526.	6.			4 45	. 3 464.	477.6 50	. 5 499	œ	532.9 485.	9 454	.1 50	.8 46	.3 463.		.8 450	.6 452.	.3	499.2 462	9 475
F-6			AVG	5 456.8	463.6	5 443.9	444.3	2 517.2	39.2 451.4 455	7 535.		.3 547.	473.3 467.	_	521	456.7 466.1	505.8 515.8	3 457.	,	447	477.8 460.6	3 474	499	63 3 461 9
	,	- 1871	3	.5 462.5	475	427.5	450	5 519.2	4	541.7	7 494.2	8 563.3		520	515	7 456.		448.	,	460		.7 468.	7 501	463
Brend		808	2	454	445	444.2 460	430	522.5	459.2 455.8	530	471.	530.8	473.3 456.7	547	515	481.	520.8	465	,	450	443.3 460.8	471	506.7	465
BASELINE		180				N	∞		2	2		3	3	1	00		00	5		3	3	00		u
BASELI		180	-	453.3 454	470.8 445	444	452.8	510	459.	534.2	467	548.3	473	531.7	535.	460	520.8	458.		433.3	443	482.8	490	457

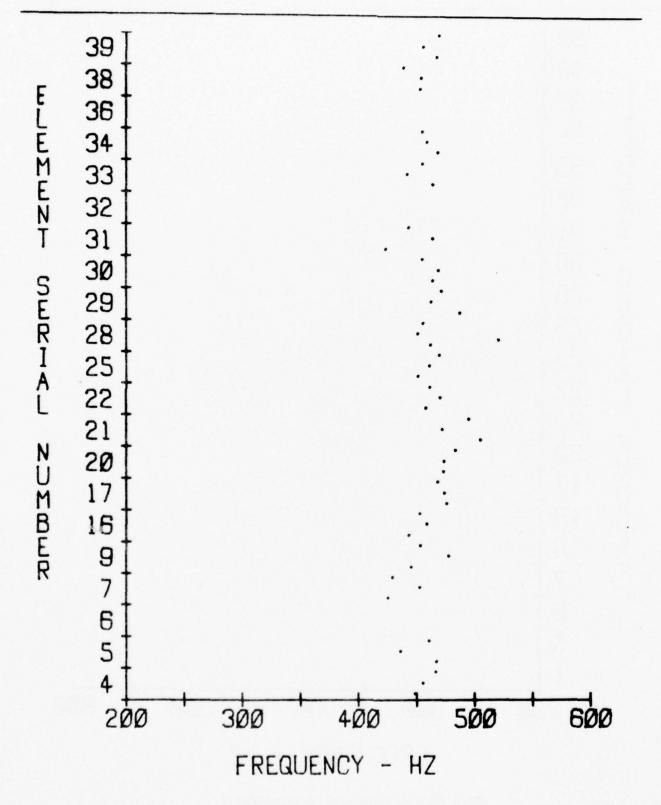
+5 PSI



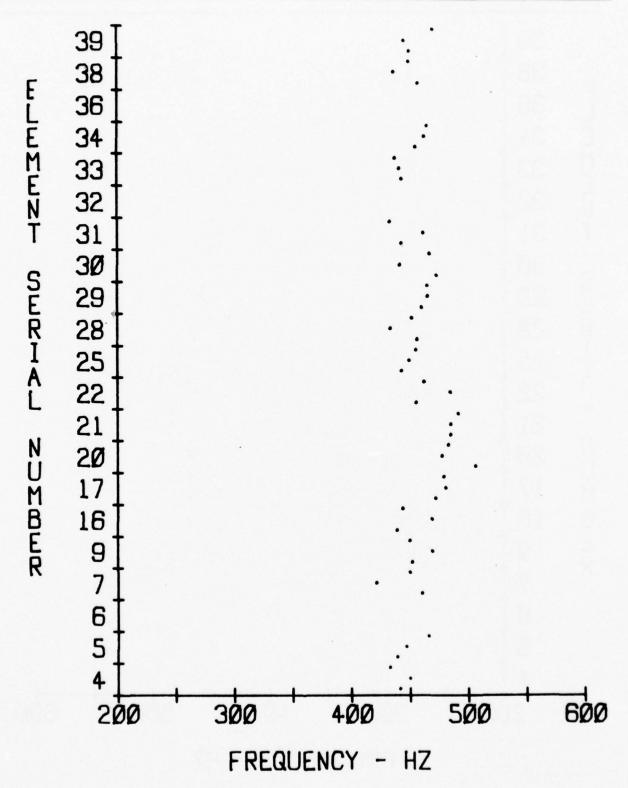
FREQUENCY VARIATION AT +5 PSI, DURING BASELINE TEST PRIOR TO ACCELERATION ENVIRONMENT REFERENCE TASK F-6.



FREQUENCY VARIATION AT +5PSI DURING +1
AXIS ACCELERATION ENVIRONMENT, REFERENCE TASK
F-7-1

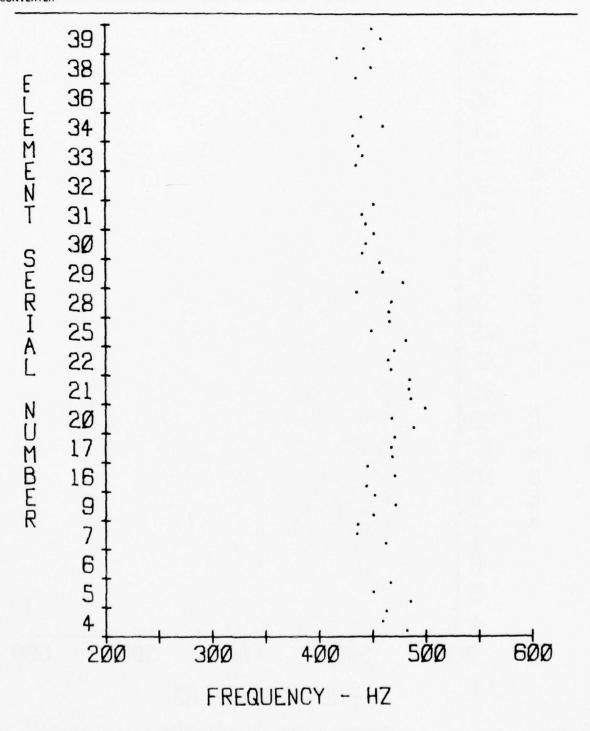


FREQUENCY VARIATION AT +5PSI DURING -1
AXIS ACCELERATION ENVIRONMENT, REFERENCE TASK
F-7-2



FREQUENCY VARIATION AT +5 PSI DURING
-3 AXIS ACCELERATION ENVIRONMENT, REFERENCE TASK F-7-3.

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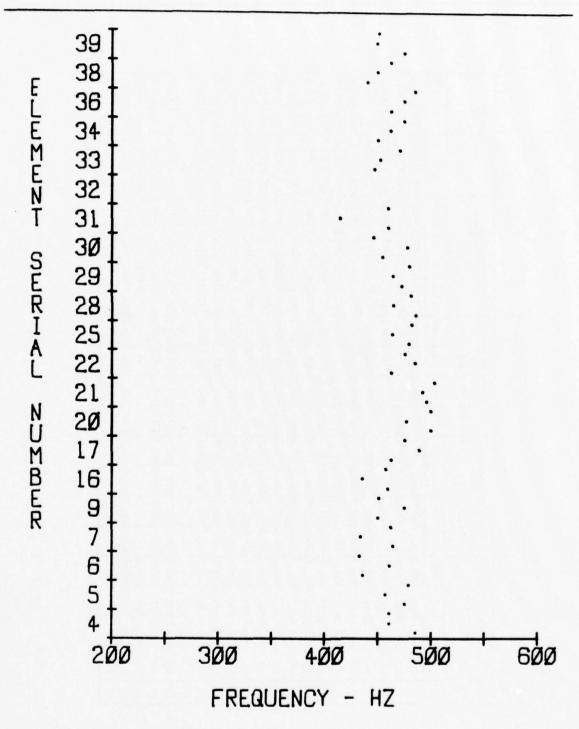
FREQUENCY VARIATION AT +5 PSI DURING +3 AXIS ACCELERATION ENVIRONMENT REFERENCE TASK F-7-4

REPORT MDC LO356 JULY 1976

Freq.		Baseline 2100 - 2	aseline F-8 2100 - 2162		Z X	Vibratio 2163 - Axis 3	Vibration Random 2163 - 2234 Axis 3 F-9-1		¥ . ¥	Vibration Random 2235 - 2306 Axis 1 F-9-2	on Rand - 2306 F-9-2	5		2307	Baseline 2307 - 2369 F-10	•		237	Baseline 2370 - 2252 F-11	25.0
N/S	-	2	3	AWG	-	~	3	AME	-	2	3	AVG	-	2	3	AVG	-	2	3	AVG
-	485	460	460	468.3	450	466.7	453.3	466.7 453.3 456.7 368.3 368.3 377.5 377.4 385.8 387.5 387.5 386.9 370.8 375	368.3	368.3	377.5	371.4	385.8	387.5	387.5	386.9	370.8	375	375	373.6
2	475	456.7	479.2	470.3	445.8	473.3	461.	479.2 470.3 445.8 473.3 461.3 460.1 455.8 487.5 485	455.8	487.5	485	476.1	472.5	463.3	465.8	467.2	476.1 472.5 463.3 465.8 467.2 464.2 462	462	465.8 164	\$
9	435.8	435.8 460.8	432.5 443	443	,	,	'	•	•	,			465	40	465	456.7	453.3	451.7	456.7 453.3 451.7 454.2 453.1	453.
1	464.2	433.3		453.3	462.5 453.3 452.5 435	435	462.	462.5 450	468.3 435	435	433.3	433.3 445.5 444.2 465	444.2		449	452.7	452.7 445.8 429.2	429.2	450	441.7
6	450	475	451	458.7 455	455	466.7	464.	466.7 464.2 461.9 468.3	468.3	495.8	483.3	495.8 483.3 482.5 490.8 460.5 466.7 472.7 455.8	490.8	460.5	466.7	472.7	455.8	457.5 460	460	457.8
9	459.5 435	435	457.5	457.5 450.7 435	435	442.5	442.5 457.5 445	5 445	470	455.8 450	450	458.6	458.6 479.2 451	451	456.2 462.1 449	462.1	449	452.5	452.5 444.2 448.6	448.
17	462.5	462.5 489.2	475	475.6	467.8	501.7	476.	475.6 467.8 501.7 476.7 482.1 476	476	479.2	473.3	479.2 473.3 476.2 501		464.2 495	495	486.7	486.7 480.8	481.7	481.7 482.5 481.7	481.
50	200	476.7 500	200	492.2	492.2 489.2 510	510	484	484.2 494.5 518.3 500	518.3	200	483.3	483.3 500.5 487.8 493.3 501.7 494.3 425	487.8	493.3	501.7	494.3	425	430	423.3 426.1	426.
12	495.8	495.8 491.7	503.3	496.9	503.3	508.3	511.	503.3 496.9 503.3 508.3 511.7 507.8 501	201	482.5 490	490	491.2	491.2 488.3 488.3 476	488.3	476	484.2 490	96	486.2 485	485	487.1
22	462.5 485	485	475	474.2	474.2 487.5 480	480	475		493.3	489.7	489.2	480.8 493.3 489.7 489.2 490.7 498.3 509.2 483	498.3	509.2	483	496.8	496.8 479.2		483.8 487.5 483.5	483.
52	479.2	463.3	481.7	474.7	386.7	364.2	396.7	479.2 463.3 481.7 474.7 386.7 364.2 396.7 382.5 396.7 415.8 406.7 406.4 410	396.7	415.8	406.7	406.4		\$0\$	372.5 395.8 375	395.8	375	390.8	390.8 383.3 379.7	379.
82	485	464.2 481	481	476.7	476.7 471.7 482.5 440	482.5	440	464.7	464.7 469.2 480	480	459.2	459.2 469.5 475	475	491.7	457.5	474.7	491.7 457.5 474.7 478.3 475	475	475	476.1
53	472.5	472.5 464.2 480	480	472.2 450	450	200	485.8	485.8 490.3 514.2 489.2 512.5 505.3 478.3 500	514.2	489.2	512.5	505.3	478.3		474	484.1	469.2	465.8	465.8 466.7 467.2	467.
30	454.2	478.3	2 478.3 445.8	459.4 465	465	465	455.8	455.8 461.9 468.3 465 490	468.3	465	490	474.4	474.4 491.7 465.8 479.7 479.1 465	465.8	479.7	479.1	465	457.8	457.8 460.8 461.2	461.
31	460	414.2 460	460	444.7	444.7 473.3 450	450	462.	462.5 461.9	495	470.8	482.5	470.8 482.5 482.8 478.3 467.5 492.5 479.4	478.3	467.5	492.5	479.4	455.8	459.2	455.8 459.2 464.2 459.7	459.
32			•	,	,	•	•	•							•				,	•
33	446.7	452.5	446.7 452.5 470.8 456.7 450	456.7	450	478	450	459.3	459.3 471.7 485	485	463.3	463.3 473.3 464.2 475	464.2		485	474.7	474.7 459.2 460	460	453.3 457.5	457.
34	450	462.5 475	475	462.5 490	490	462.5	488.	462.5 488.3 480.3 491.7 510.8 506.7 503.1 479.2 506.7 461.7 482.5 455.8 453.3	491.7	510.8	506.7	503.1	479.2	206.7	461.7	482.5	455.8	453.3	455.8	454.9
36	462.5	475	485	474.2		•	٠	•		,	•	•	480.8 491.7 485	491.7	485	485.8	466.7	466.7 465.8	465	465.8
38	440	450	462.5	450.8	467.5	464.3	461.	462.5 450.8 467.5 464.3 461.7 464.5 450	450	44.2	466.7	444.2 466.7 453.6 439.2 466.7 438.3 448.1 462.5 452.5 444.2	439.2	466.7	438.3	448.1	462.5	452.5	444.2	453.1
-			-		Caro comp	-	1	-		-	-				-	-		-	-	

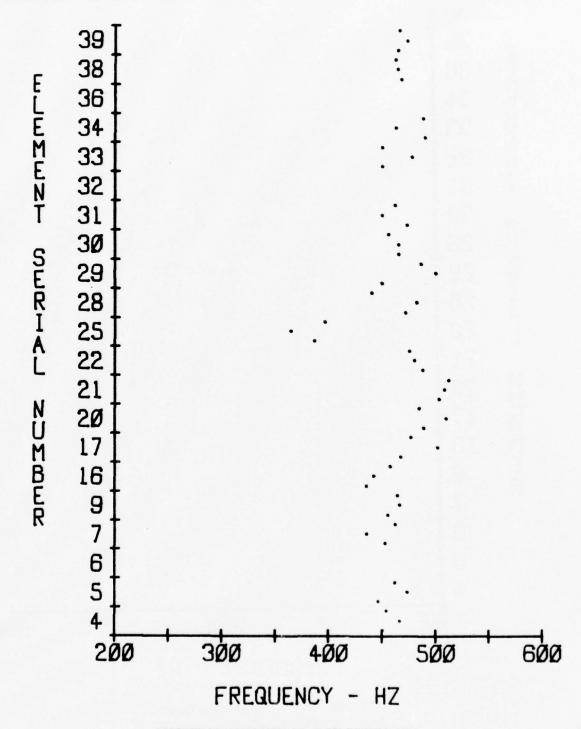
+5 PSI

REPORT MDC LO356 JULY 1976



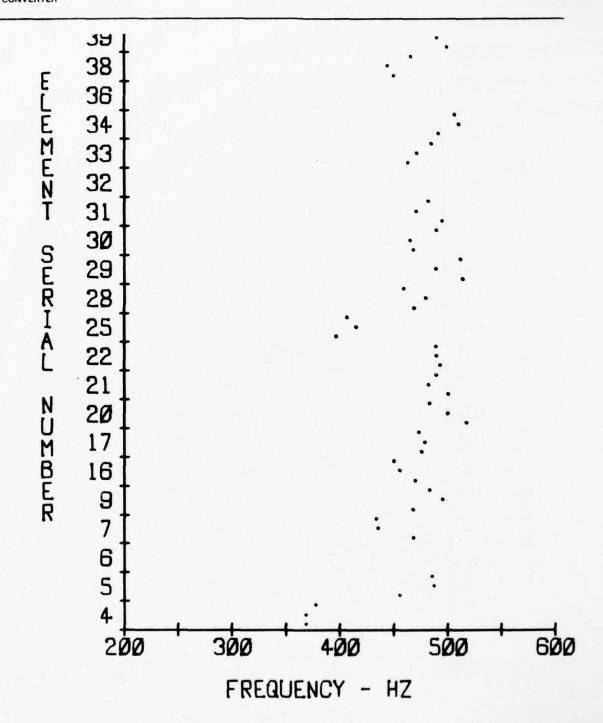
FREQUENCY VARIATION AT +5 PSI DURING BASELINE TEST PRIOR TO VIBRATION ENVIRONMENT, REFERENCE TASK F-8.

REPORT MDC LO356 JULY 1976

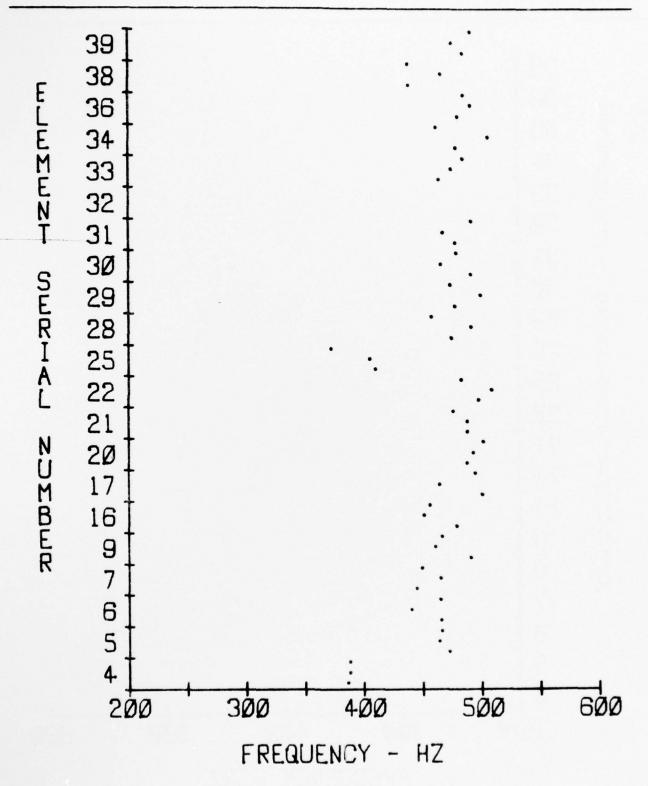


FREQUENCY VARIATION AT +5 PSI DURING AXIS
3 OF RANDOM VIBRATION ENVIRONMENT, REFERENCE TASK
F-9-1.

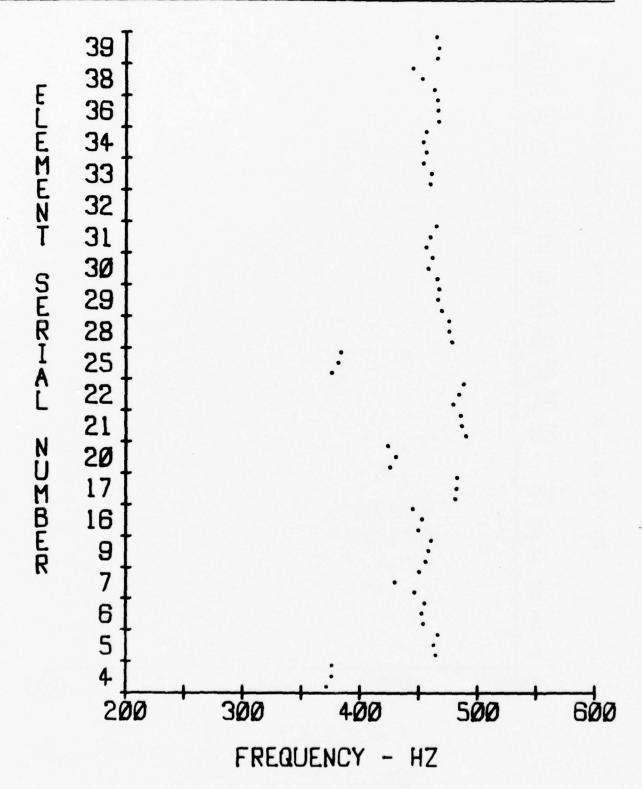
REPORT MDC LO356 JULY 1976



FREQUENCY VARIATION AT +5 PSI DURING AXIS 1 OF RANDOM VIBRATION ENVIRONMENT REFERENCE TASK F-9-2



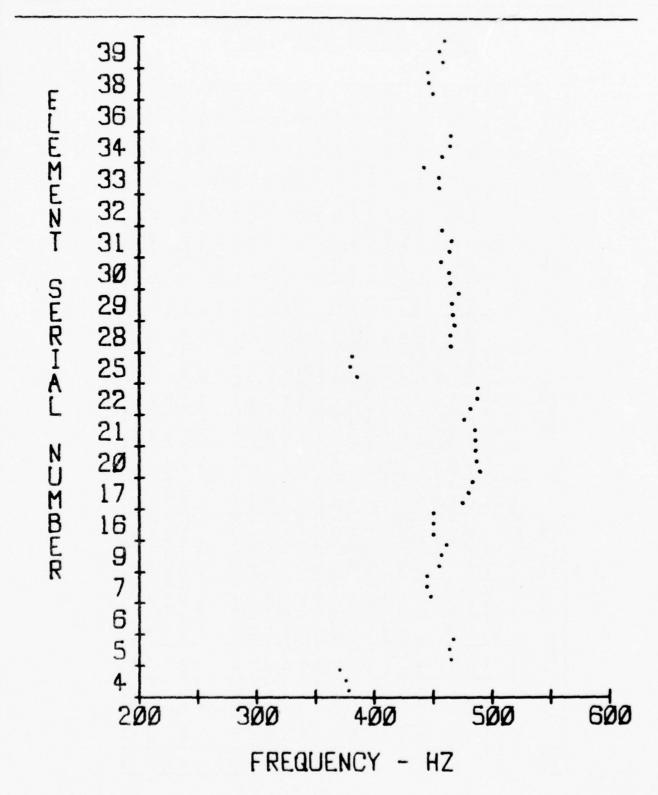
FREQUENCY VARIATION AT +5 PSI DURING BASELINE TEST, AFTER RANDOM VIBRATION ENVIRONMENT REFERENCE TASK F- 10



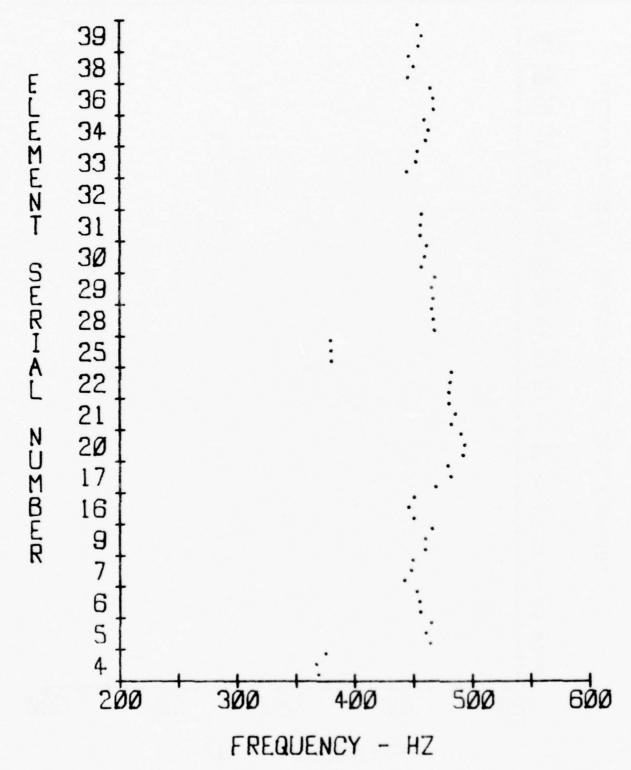
FREQUENCY VARIATION AT +5 PSI DURING BASELINE TEST PRIOR TO ACOUSTICAL NOISE ENVIRONMENT, REFERENCE TASK F-11

BEST AVAILABLE COPY

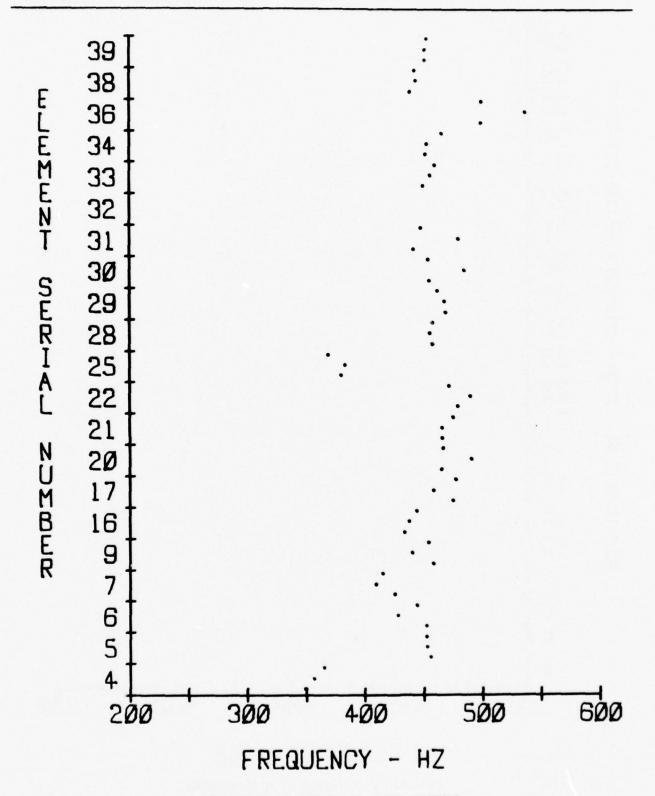
+	AVG	313.6	401.1	1	374.9	405.3	456.4	442.8	437.2	435.8	430.2	345.7	427.3	443.9	386.1	393.3	439.7	424.9	406.4	•	386.1	423.9
Altitude 50K Ft 2616 - 2906 F-15-2	3	306.7 312.2 315.8 320.8 304.2	402.5 410.8 401.1	,	384.2 366.7 374.9	414.2	422.5 421.7 426.4	451.7 431.7 442.8	430 431.7 437.2	427.5	424	343.3 345.8 345.7	437.5 427.3	440	382.5	387.5 393.3	439.2 439.7	420.8 424.9	391.7		383.3 386.1	446.7 423.9
titude 50K 2616 - 2906 F-15-2	2	320.8	402.5	,	384.2	400	422.5	451.7	430	440.8	443.3	343.3		450	383.3	405	440	454	419.2		375	425
IA	-	315.8		,		401.7	435			439.2	423.3	348	418.3 426	441.7	392.5	387.5			408.3	,		400
Ft	AVG	312.2	399.7 390	,	376.4	411.4		441.4	441.2	431.9	430.3	345		440.8 441.7 450	390.6	398.3	437.2	450.6	406.6	,	381.1	
90K 906	3	306.7			378.3 376.4 374	406.3	418.3	440.8 441.4 445	443.3 441.2 450	429.2	431.7	350	441.7		387.5 390.6 392.5 383.3	415.8	447.5	416.7 420.6 430	402.5		391.7	441.3
Altitude : 90K 2616 - 2906 F-15-1	2		464.2 462.8 455.8 452.5 451.7 453.3 416.7 387.5 395	,		465.8 461.9 458.3 440 454.2 450.8 416.7 411.3 406.3 411.4 401.7 400 414.2 405.3	431.7 418.3 425			482.2 465.8 465.8 475 468.9 423.3 443.3 429.2 431.9 439.2 440.8 427.5 435.8	480.8 481.7 480.8 479.2 490 471.3 480.2 437.5 421.7 431.7 430.3 423.3 443.3 424	325	423.3 441.7 430	457.5 425	390	387.5	439.2 447.5 437.2 440	430	450.8	,	376.7 391.7 381.1 400	453.3 452.6 422.5 408.3 441.3 424
Alt	-	356.7 305.8 324	116.7	,	385.8	116.7		458.3 477.5 470.3 433.3 450	490.8 466.7 474.2 438.3 442	123.3	437.5					391.7	425		106.3	,		422.5
•	AVG	356.7	153.3	141.1	116.4	150.8	138.3	170.3	174.2	168.9	180.2	383.3 369.2 377.5 360	157.5	166.5	454.2 464.7 394.2	156.9	1	455.6 415	157.5	512.5	442.1 375	152.6
Baseline 2553 - 2615 F-14	3		151.7	144.2	116	154.2	144.2	177.5	166.7	175	471.3	369.2	158.3	461.7	154.2	148.3	,		166.7			453.3
Baseline 2553 - 26 F-14	2	356.7	152.5	427.5	109.5	140	137.5	158.3	190.8	165.8	490	383.3	455.8	468.3	485	480.7	1	156.7	153.3	537.5	444.2	452
	-	348.3	155.8	151.7	125 1	158.3	133.3			165.8	179.2	-	158.3	169.5		141.7	1	450 456.7 460	152.5	200	439.5	452.5
	AVG	370.1 348.3 356.7 365	162.8	154.1	146.3	6.19	448.6 433.3 437.5 444.2 438.3 425	176.7	491.9 465	182.2	180.8	379.6	166.7	166.7	158.9	156.1	,	150	160.8	166.2	146.9	154.9
ine 2552 3	3		164.2	454.7 452.5 454.1 451.7 427.5 444.2 441.1	448.3 449 446.3 425 409.2 416 416.4 385.8 365	165.8		179.2		480	181.7	379.2 379.6 380	165	468.3 466.7 469.5 468.3 461.7 466.5 440	160.8	156.7	,	153.3	159.5	467.5 466.7 464.5 466.2 500 537.5 500	445.8 446.9 439.2 444.2 443	153.3
Baseline 2370 - 2552 F-13	2	366.7 375		154.7	148.3	460 1	445.8 450	181.7	193.3		180.8	379.5	166.7		159.5	155.8	,	152.5	162.5	166.7	450	126.7
	-	368.7	464.2 460	455	441.7		450	169.2	192.5	181.7		380	468.3	466.7	129.7	455.8	7	144.2	460.8	467.5		454.7
a)	AVG	374.3		,	445.3	457.5	450	479.4	187.5	482.3 481.7 485	485.6	80.8 381.7	165.8	468.1	56.7 461.4 456.7 459.2 460.8 458.9 455	462.5	,	1,0,1	462.8 460.8 462.5 459.2 460.8 452.5 453.3 466.7 457.5 406.3 420.8 402.5 409.9 408.3 419.2 391.7 406.4	,	447.5	458.3 454.7 456.7 453.3 454.9 452.5 452
Noise 2552	3	370	166.7 465	,	444.2 445.3	460.8 457.5 460	450	483.3 479.4 469.2 481.7 479.2 476.7 475	485.8 487.5 492.5 493.3 490	476	487.5 485.6 480	380.8	468.3 465.8 468.3 466.7 465 466.7 458.3 455.8 458.3 457.5 425	471.7 468.1 466.7 465	156.7	457.5 462.5 455.8 455.8 456.7 456.1 441.7 480.7 448.3 456.9 391.7 387.5 415.8 398.3 387.5 405		442.5 450.8 444.2 452.5 453.3 450	465	,	445.8 447.5 445	460
Acoustical No 2370 - 2552 F-12	2	375	463.3 4	,	444.2	456.7	450 4	480	486.7	485 4	(2)	379.2	464.2 6		463.3 4	465.8		455	465	,	446.7	
Aco.		377.8	465 4	,	447.5	455	450 4	475 4	490	485.8	481.7 487	385	465	466.7 465.8	464.2 463.	464.2		455	458.3	,	450	459.2 455.8
Freq.	N/S	4	2	9		6	16 1		20	21	22	52	28	59	30	-		-	34	-	38	39



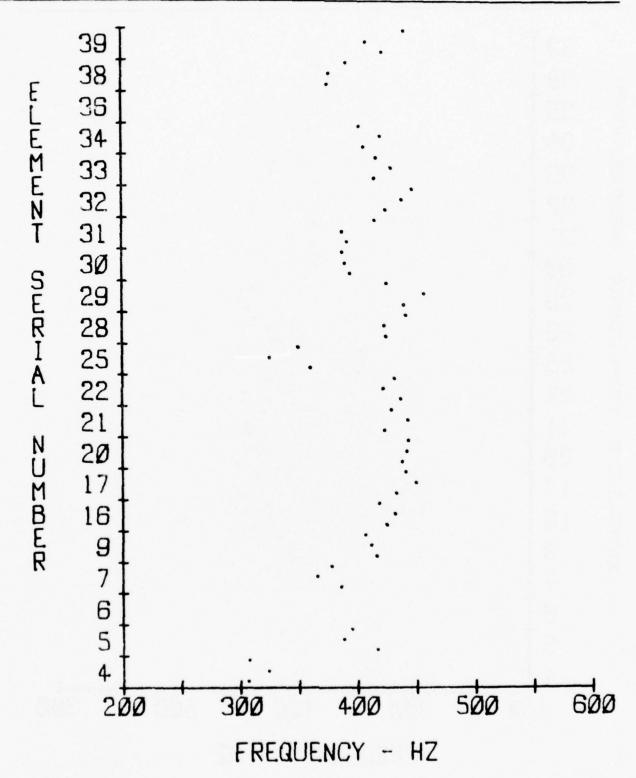
FREQUENCY VARIATION AT +5 PSI DURING ACOUSTICAL NOISE ENVIRONMENT, REFERENCE TASK F-12



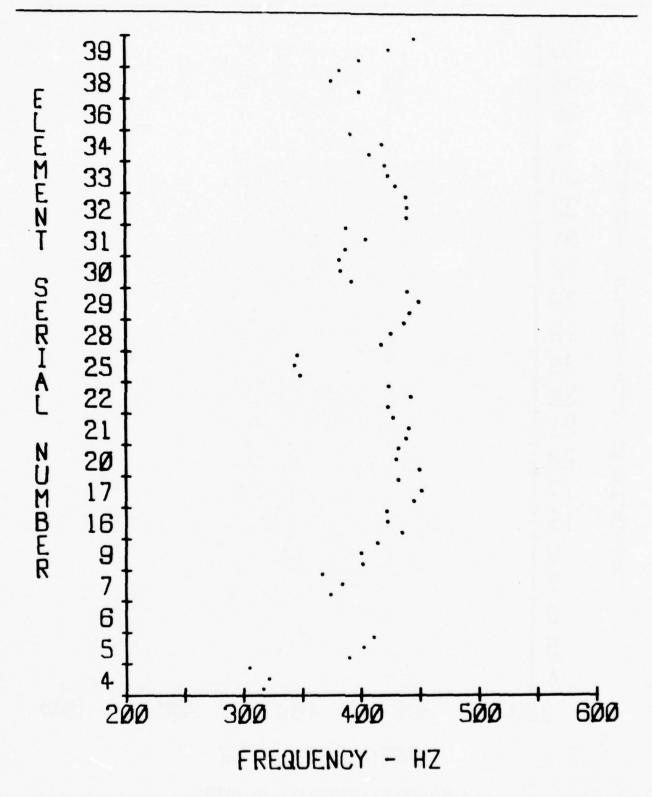
FREQUENCY VARIATION AT +5 PSI DURING BASELINE TEST AFTER ACOUSTICAL NOISE ENVIRONMENT, REFERENCE TASK F-13



FREQUENCY VARIATION AT +5 PSI, DURING BASELINE TEST PRIOR TO ALTITUDE ENVIRONMENT REFERENCE TASK F-14

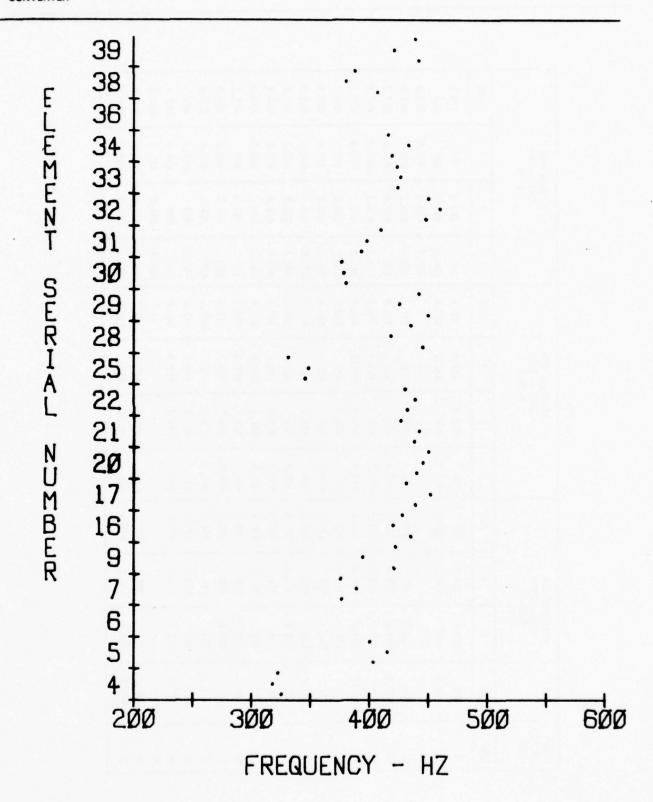


FREQUENCY VARIATION AT +5 PSI, DURING 90K FT ALTITUDE ENVIRONMENT, REFERENCE TASK F-15-1

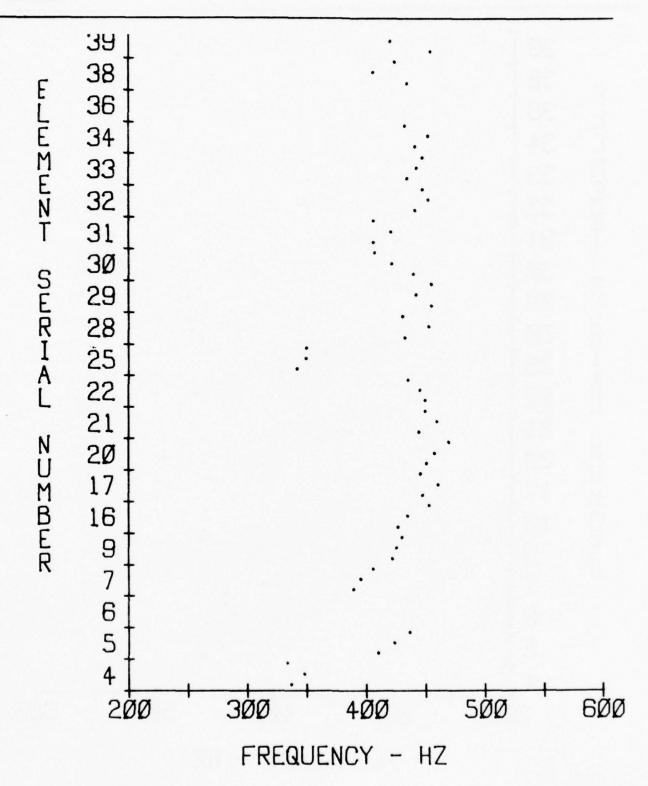


FREQUENCY VARIATION AT +5 PSI, DURING 50K FT ALTITUDE ENVIRONMENT, REFERENCE TASK F-15-2

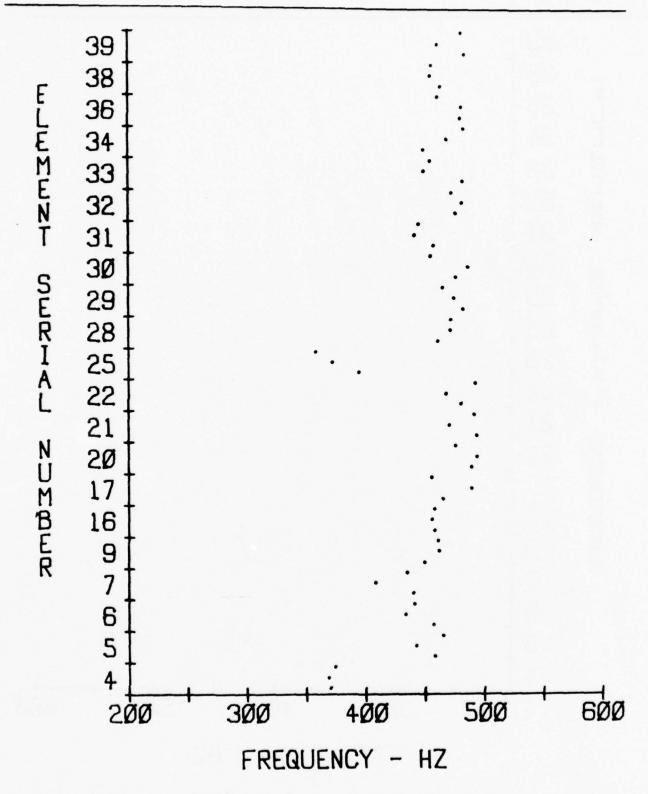
		AVG	370.8	455	443.6	427.8	457.8	457.5	470.5	486.7	485.8	480.8	375.2	468.9	474.7	473.2	448.5	477.6	463	468.1	474.9	458.9	4.94
	Baseline 2616 - 2906 F-16	8	374	465	8.044	435	8.094	458.3	455.8	476	492.5	493.3	358.3	472.5	465.8	455	445.8	473.4	455.8	484.2	461.7	456.7	482.5
	8as 2616 F-	2	368.3	441.7	433.3	408.3	462.5	455.8	490	494.2	8.074	468.3	372.5	472.5	475	487.5	41.7	482.5	450	470	481.7	455.8	461.7
			370	458.3	456.7	440	450	458.3	465.8	490	494.2	480.8	394.7	461.7	483.3	477	458	477	483.3	450	481.3	464.2	485
		AVG	339.4	423.6		397	425.8	438.3	451.4	459.8	451.4	443.5	347.2	439.1	451.4	423.1	411.7	447.7	442.2	442.8		422.2	436.9
	Altitude 10K 2616 - 2906 F-15-4	3	333.3	436.7		406	430	453.3	445.8	470	450	435	350	430.8	455.8	407.5	406.7	448	448.3	433.3		425	435
+5 PSI	Altit 2616 F-	2	348.3	424		395.8	425	435	8.094	458.3	460	445.5	350	453.3	442.5	421.7	421.7	453.3	443.3	453.3		406.7	420.8
		-	336.7	410		389.2	422.5	426.7	447.5	451	444.2	450	341.7	433.3	455.8	440	406.7	441.7	435	441.7		435	455
		AVG	321.7	406.1		380.1	412.5	427.8	9.044	445	435.1	433.6	341.4	432.8	438.9	378.1	400.3	452.8	424.4	422.8	,	391.7	433.9
	e 25K 2906 -3	3	322.5	400		375	422.5	428.3	430.8	450	426	430	330.8.	435	441.7	376	410	450	423.3	415.8		388.3	439.2
	Altitude 25K 2616 2906 F-15-3	2	317.5	415		389.2	394.2	420	451.7	445	441.7	439.2	348.3	418.3	425	378.3	397.5	460	426	433.3	,	380	420.8
		-	325	403.3	,	376	420.8	435	439.2	440	437.5	431.7	345	445	450	380	393.3	448.3	424	419.2	,	406.7	441.7
	Freq. (a +5. PSI	N/S	4	5	9	7	6	91	17	50	21	22	52	82	58	30	31	32	33	34	36	38	39



FREQUENCY VARIATION AT +5 PSI DURING 25K FT ALTITUDE ENVIRONMENT, REFERENCE TASK F-15-3



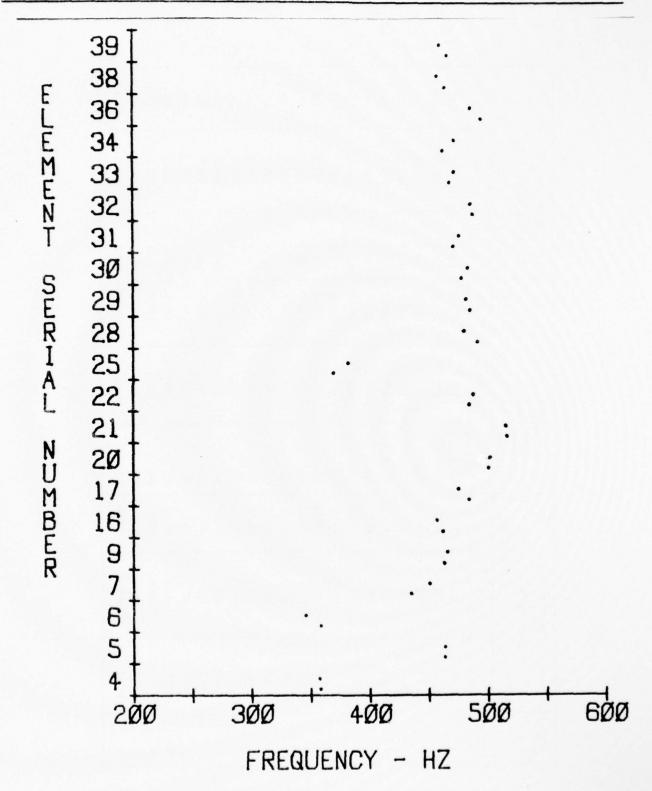
FREQUENCY VARIATION AT +5 PSI, DURING 10K FT ALTITUDE ENVIRONMENT, REFERENCE TASK F-15-4



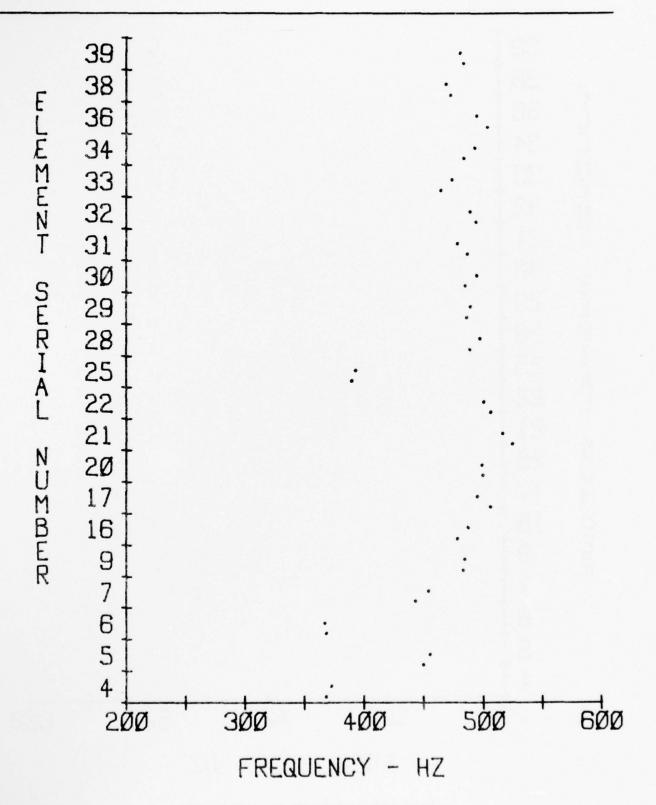
FREQUENCY VARIATION AT +5 PSI DURING BASELINE TESTING AFTER ALTITUDE ENVIRONMENT, REFERENCE TASK F-16

		AVG	382.1	464.2	382.5	459.6	489.6	9.664	524.5	9.619	529.2	513.4	405.9	521.3	511.2	200	492.6	501.3	475.5	491.9	510.4	482.1	493.8
	Baseline E-2-3 24 - 3228	2	383.3	465.8	380.8	8.094	487.5	495	525	520	523.3	517.5	401.7	505	510.8	491.7	489.2	502.5	475	489.2	512.5	479.2	493.3
	Baseline E-2-3 3124 - 3228	-	380.8	462.5	384.2	458.3	491.7	504.2	524	519.2	535	2.603	410	537.5	511.7	508.3	495.9	200	476	494.7	508.3	485	494.2
		AVG	370.4	452.5	367.5	448.8	483.8	482.9	6.005	499.5	6.025	503.9	391.7	464	488.4	4.064	483.4	492.5	470	489.6	\$000	472	483.4
+5 PSI	ine 2 31 2 3	2	372.5	455	366.7	454.2	484.2	487.5	495	€ 66₩	516.7	105	393.3	864	490	495.8	479.2	490	475	494.2	495.8	470	481.7
+	Baseline E-2-2 3019 - 31 2 3	-	368.3	450	368.3	443.3	483.3	478.3	506.7	200	525	506.7	390	490	486.7	485	487.5	495	465	485	505	474	485
		AVG	357.3	463.3	351.7	443	464.6	459.2	479.6	501.4	515.9	486.3	376.1	485.9	483.4	480.8	473.4	487.1	470	467.5	490.4	6.094	463.4
	Baseline E-2-1 2907 - 3018	2	356.7	463.3	345	451	465.8	456.7	475	501.7	515	488.3	382.5	480	481.7	483.3	476	485.8	471.7	472.5	485.8	457.5	094
	7 530	-	357.8	463.3	358.3	435	463.3	461.7	484.2	501	516.7	484.2	369.7	491.7	485	478.3	470.8	488.3	468.3	462.5	495	464.2	466.7
	Freq. a+5 psi	N/S	4	w.	9	7	6	16	17	20	12	22	52	28	53	30	31 -	32	33	34	36	38	39

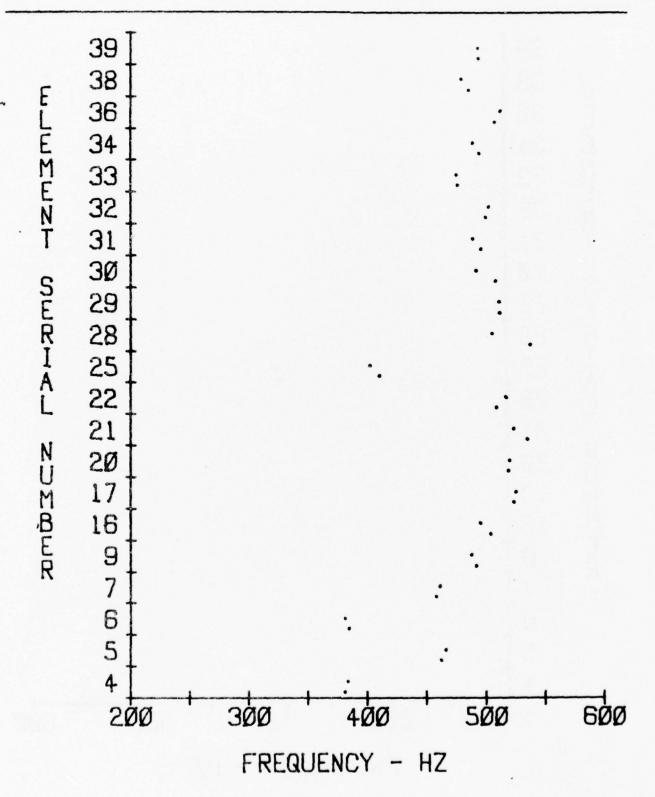
37



FREQUENCY VARIATION AT +5 PSI, DURING FIRST STEP PULSE BASELINE TEST, REFERENCE TASK E-2-1

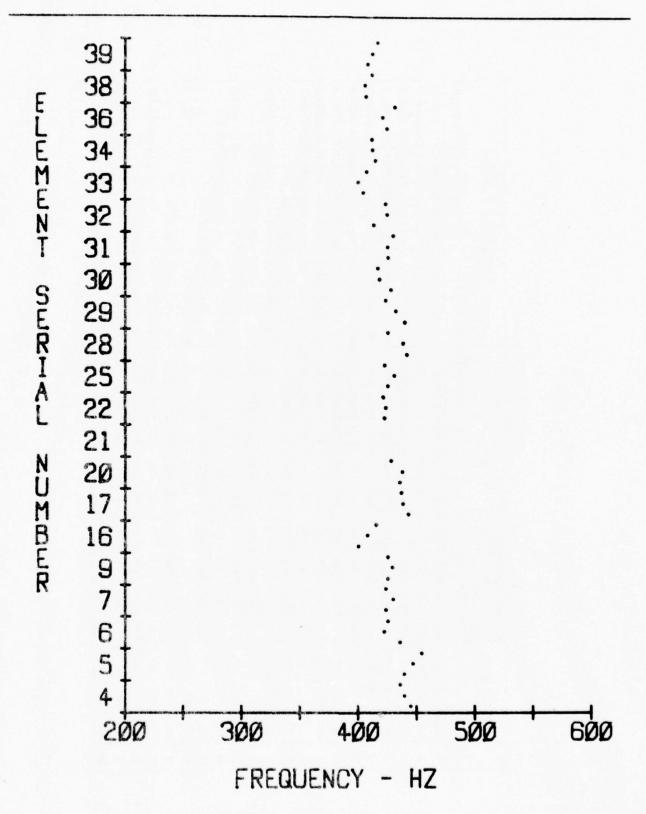


FREQUENCY VARIATION AT +5 PSI, DURING SECOND STEP PULSE BASELINE TEST. REFERENCE TEST E-2-2

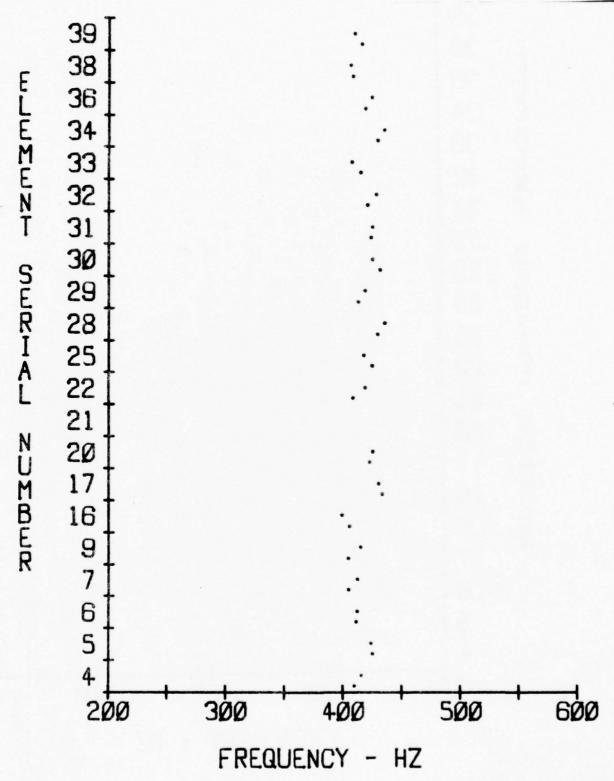


FREQUENCY VARIATION AT +5 PSI DURING THIRD STEP PULSE BASELINE TEST, REFERENCE TASK E-2-3

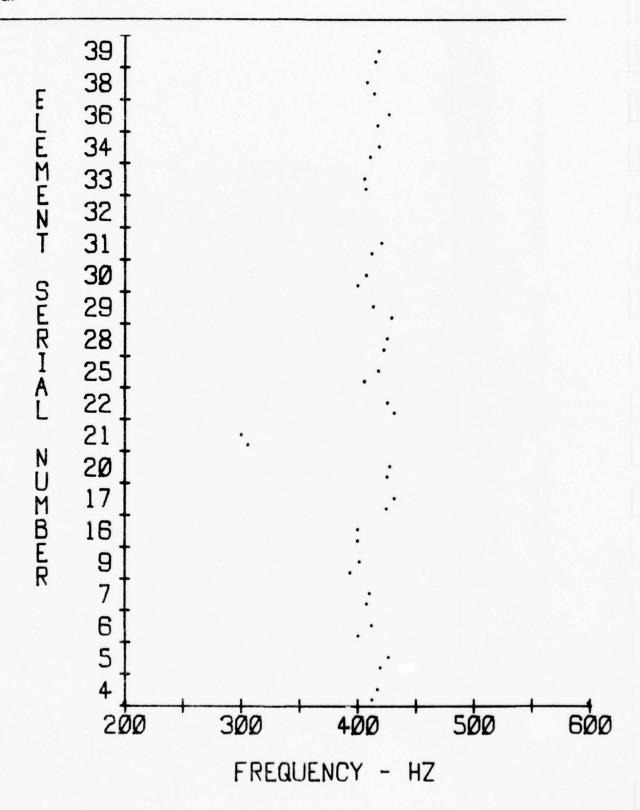
× 6	PRESSURE (D 40 PSI ONLY 605 - 966		SCHMITT TRIGGER (D) 1009 - 1050	1111 GER) 1050 2	BASE 1093	BASELINE (0) 093 - 1155	3	BASELINE E-1 1156 - 12	BASELINE E-1 1156 - 1260		BASELINE E-2 1272 - 1376	BASE 1377	BASELINE E-3 377 - 1481		BASELINE F 1482 - 1544	NE 1544 3	AVG
4	409.2 4	415.8	411.7	416.7	415	414.2	415.8		410.8 405.4	419.2	418.3	395	394.2	401.7	7 401.7	7 410.8	3 414.4
454.2 45	425 4	423.3	419.2	426.7	420.8	423.3	420.8 423.3 426.7	411.7	410	430.8	430.8 422.5 405	405	412.5	412.5 423.3	3 415.	415.8 414.2 423.7	423.
4	410.8 4	411.7 400	001	412.5 410	410	407.5	410.8	407.5 410.8 409.2 401	401	417.5	417.5 411.7 402.5	402.5	400	104	405		395.8 409.9
423.3 40	404.2 412.5 407	12.5	5	410	405	406.7	399.2	406.7 399.2 398.3 387.5 400.8 410	387.5	400.8	410	389.2	389.2 391.7	394.2		389.2 385	403.6
4	14.2 4	15.2	393.3	404.2 415.2 393.3 401.7	400	401.7	405.8	401.7 405.8 413.3 395	395	400	405.8	405.8 390.8	382.5	392.	382.5 392.5 389.2 395.8 403.5	2 395.	3 403.
415.8 40	405 33	399	400	90	400	400	393.3	393.3 391.7 393.3 406.7 402.5 397.5 400	393.3	406.7	402.5	397.5	400	394.2	2 388.3	3 385	398.9
7	436.7 433.3 430		425	431.7	414.2	408.3	415.8	408.3 415.8 423.3 423.3 435	423.3	435	436.3 425	425	428.3	419.	428.3 419.2 418.3 415.8 426.4	3 415.	8 426.
428.3 42	422.5 425		425	427.5 425	425	422.5	423.3	422.5 423.3 420.8 421.7 431.7 423.3 430.8 427.5 420	421.7	431.7	423.3	430.8	427.5	420	420.	420.8 420.8	8 425.7
	,		305.8	300	291.7	293.3	288.3	293.3 288.3 439.2 445.8 445	445.8	445	445.8	443.3	446.7	444	445.8 443.3 446.7 444.8 440	433.3	3 442.7
420.8 40	408.3 4	419.2	431.7	425	424.2	419.2 422		5 420.8 416.7 420.8 420	416.7	420.8	450	427.5	418.3	425	419.	419.2 419.2	2 421.3
422.5 425		17.5	417.5 405.8	418.3	421.7	421.7 417.5 420		412.5 411.7 413.3 412.5 413.3 406.7	411.7	413.3	412.5	413.3	406.7	415	405.	405.8 410.8	3 416.1
4	430 4	435.8	422.5	425	435	430	431.7 425		420.8 430	430	425	425	423.3	422.	423.3 422.5 423.3 420.8	3 420.	8 427.9
423.3 4	413.3 4	419.2	429.2	413.3	433.3	423.3	426.7	413.3 433.3 423.3 426.7 419.2 416.7 417.5 414.2 413.2	416.7	417.5	414.2	413.2	418.3	430.	418.3 430.8 435	435	423.8
416.6 431.7		425	00	407.5	419.2	417.5	420	407.5 419.2 417.5 420 411.7 406.7 404.2 400	406.7	404.2	400	405	401.7	423.	401.7 423.3 427.5 420.8	5 420.	8 415
430 4	424 4	425	412.5	420.8 427.9 425	427.9		435.8	435.8 410.8 410.8 417.5 415	410.8	417.5	415	412.5	412.5	425	425	429.	429.2 421.6
3.4	423.3 420.8 4	429.2		1	447.5	447.5 443.3 441.7	441.7	,	•		416.7 418.3	,	,	'	'	'	427.9
407.5 4	415 4	2.70	106.7	407.5 406.7 405.8 428.3 424	428.3	424	427.5	427.5 398.3 394.6 405.8 398.3 401.7	394.6	405.8	398.3	401.7	397.5 410	410	408.	409.2 415.8	8 408.3
11.7 430		435	410.8	419.2 430		430	438.3	438.3 404.8 405.8 410.8 408.3 405	405.8	410.8	408.3	405	407.5 420	450	415.8	8 415.8	8 417.1
31.7 4	419.2 4.	425	417.2	427.5 441.7	441.7		439.2	444.2 439.2 420.8 414.2 416.7 416.7 423.3	414.2	416.7	416.7	423.3	414.2	414.2 446.7	7 425	434.	434.2 426.5
.5 4(412.5 408.8 4	7.90	414.2	406.7 414.2 408.3 416.7	416.7	454	420.8	420.8 402.5 407.5 400	407.5		401.7 400	8	401.7	406	401.7 406.7 409.2	2 415.	415.8 408.9
7 1	7 7 416 7 410		0 317	415 9 419 3 430		425	434 2	434 2 405 8 405 8 410 8 409 2 404 2 407 5 414 2 413 8 412 5 413 7	Ans A	410 B	400 2	404 2	407	7.7	2 412	Q 412	K 413



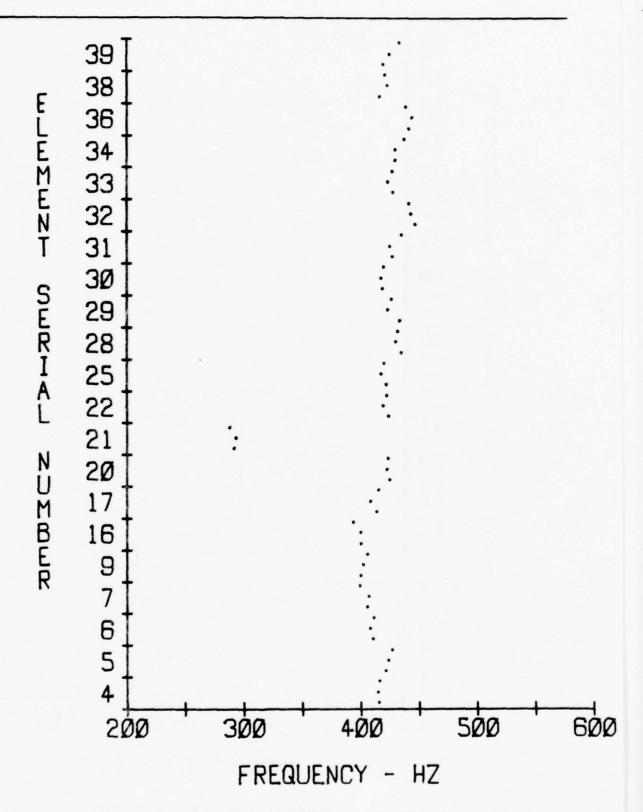
FREQUENCY VARIATION AT OPSL FIRST BASELINE AFTER ENVIRONMENTAL CHAMBER TUNING, REFERENCE TASK C



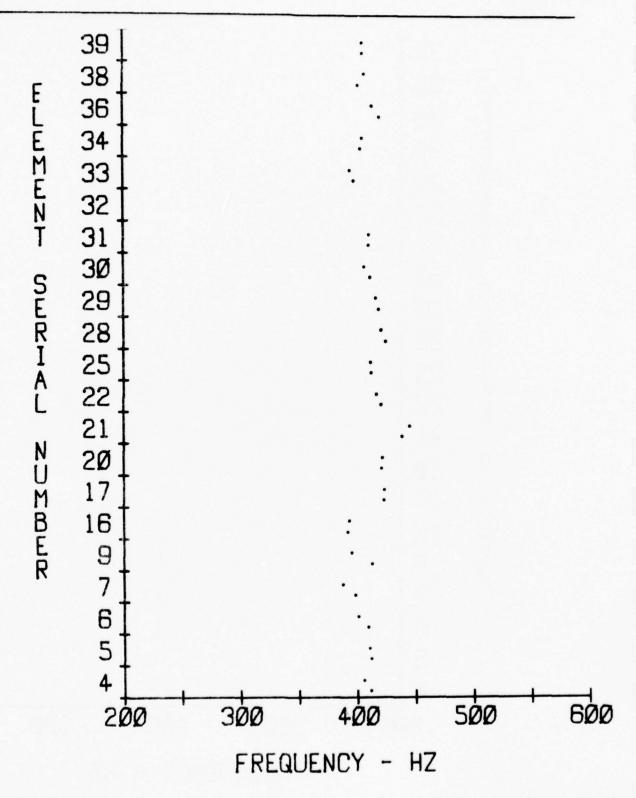
FREQUENCY VARIATION AT OPSI DURING VARIANCE IN SUPPLY PRESSURE TEST (THIS DATA AT A SUPPLY PRESSURE OF 40PSI) REFERENCE TASK D



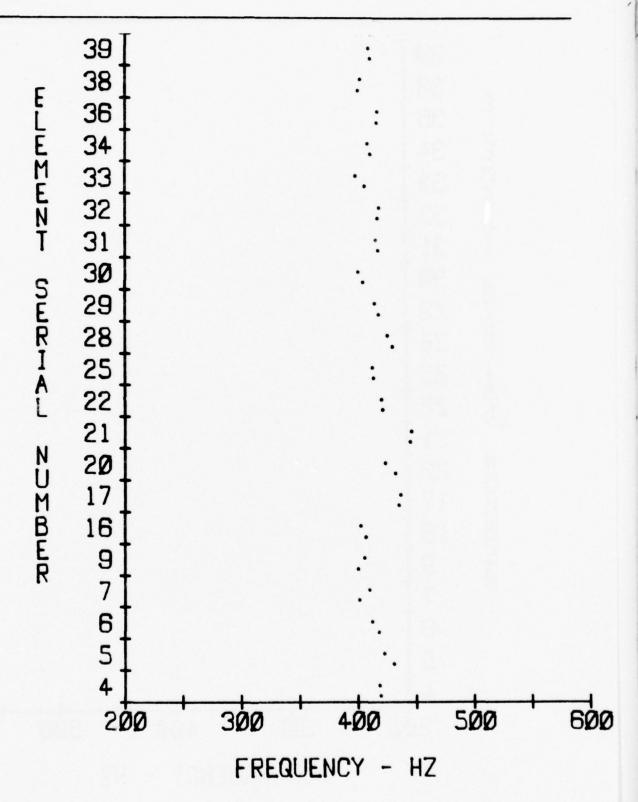
FREQUENCY VARIATION AT 0 PSI DURING SCHMITT TRIGGER TEST REFERENCE TASK D



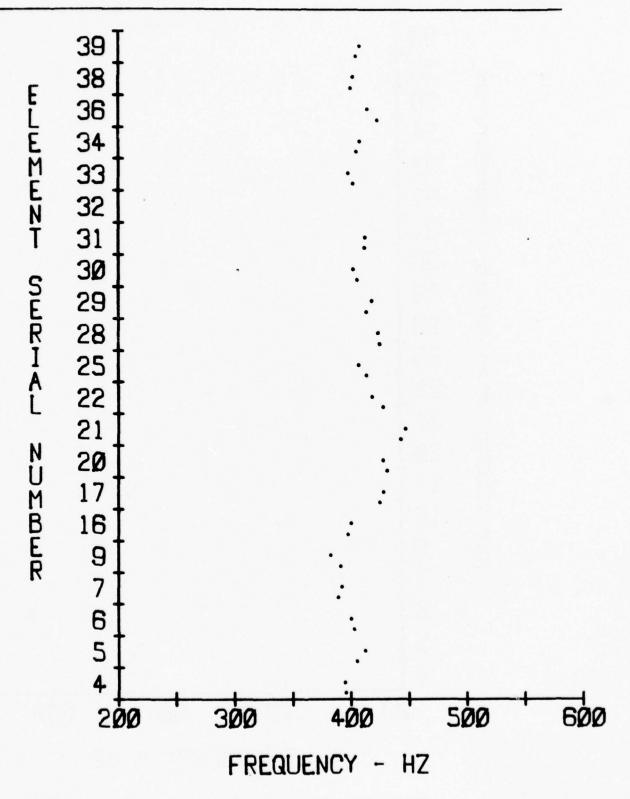
FREQUENCY VARIATION AT 0 PSI BASELINE TEST PRIOR TO STEP PULSING, REFERENCE TASK D



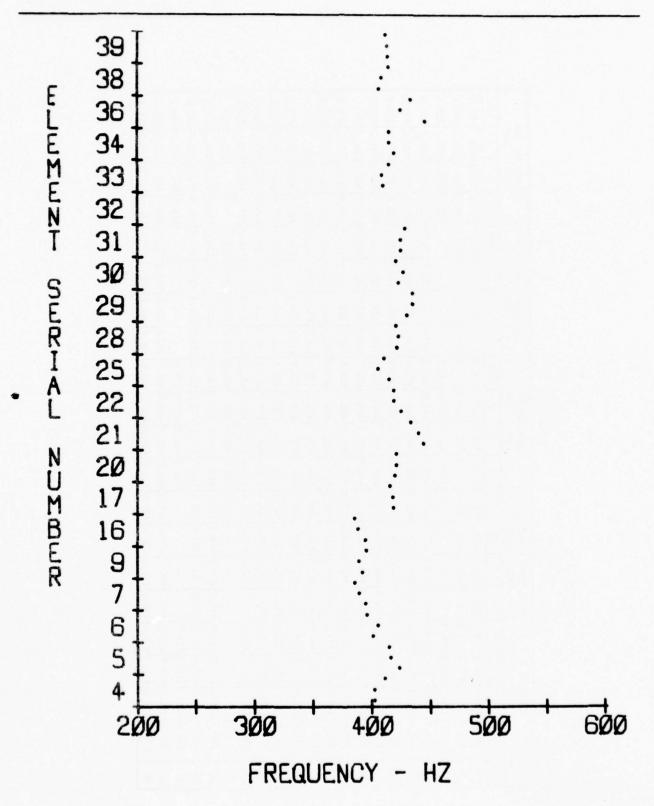
FREQUENCY VARIATION AT 0 PSI DURING FIRST STEP PULSE BASELINE TEST REFERENCE TASK E-1



FREQUENCY VARIATION AT 0 PSI DURING SECOND STEP PULSE BASELINE TEST REFERENCE TASK E-2

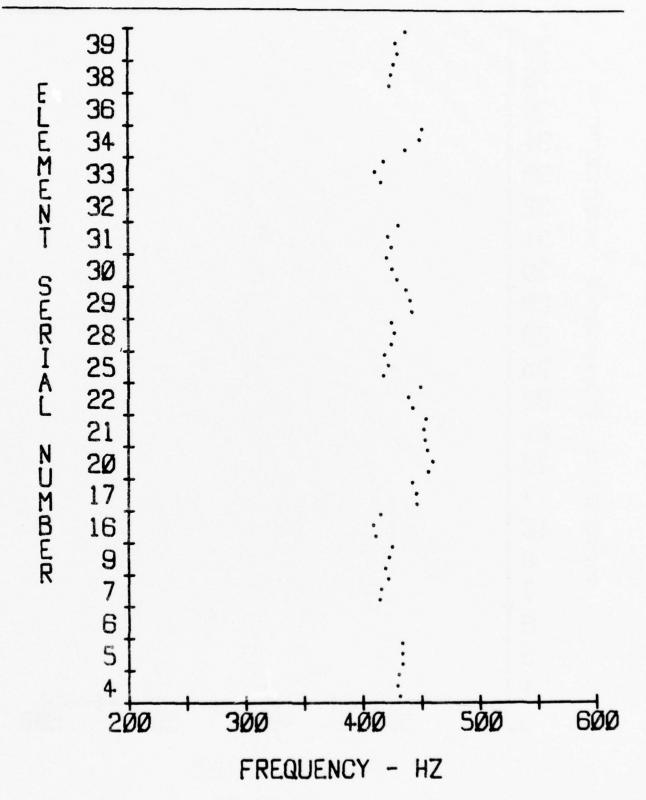


FREQUENCY VARIATION AT 0 PSI DURING THIRD STEP PULSE BASELINE TEST, REFERENCE TASK E-3

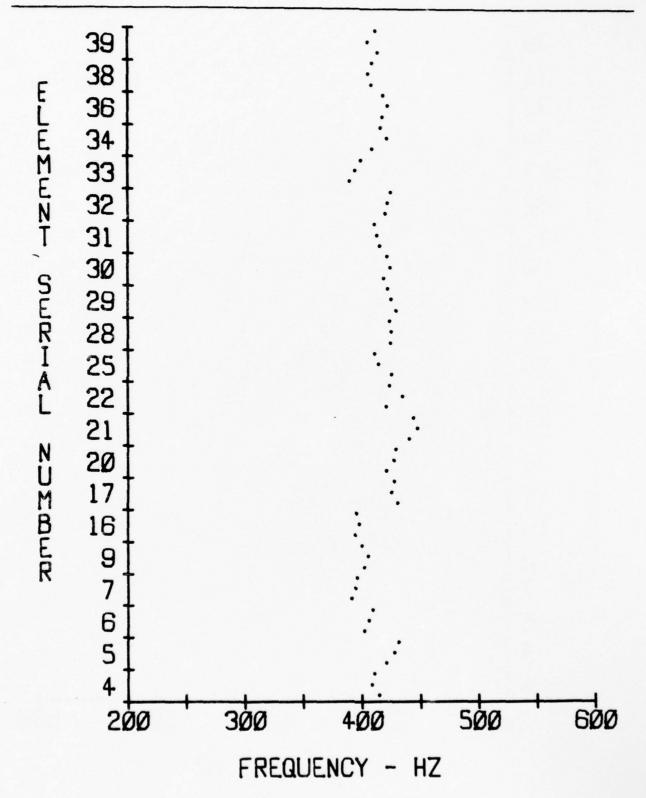


FREQUENCY VARIATION AT OPSI DURING BASELINE TEST PRIOR TO HIGH TEMPERATURE ENVIRONMENT REFERENCE TASK F-1

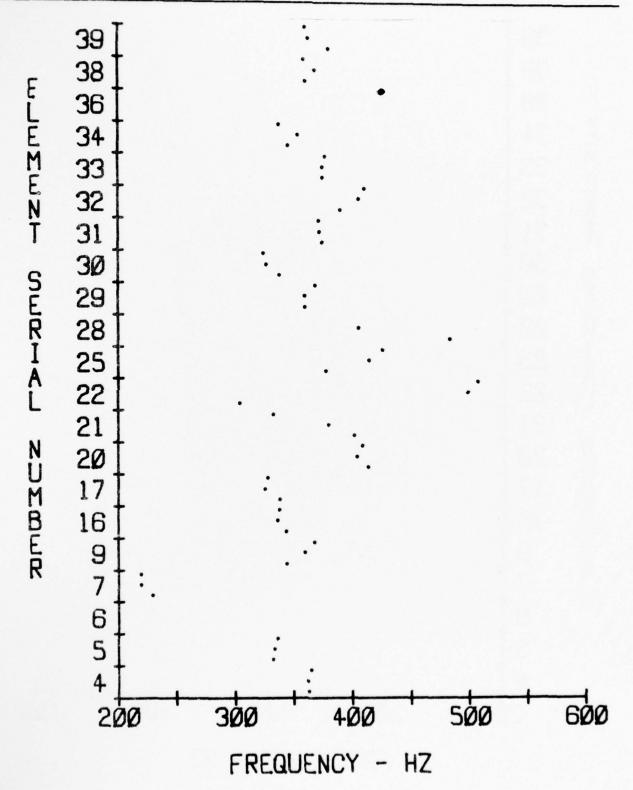
	AVG	417.2	409.2	419.4	433.6	443.3	413.4	458.5	455	471.6	463.6	465.4	471.7	480.6	480.3	410.8	450	418.3	431.8	448.2	454.7	456.4
BASELINE F-5 1746 - 1808	3	425	414.2	414.2	431.7	443.3	410	459.2	454.2	469.2	465.8	462.5	477.5 471.7	484.2	490	425	450	418.3	430.8	451.7	424.2	426.7
BASEL I 1746 -	2	410.8	407.5	435.8	434.2	443.3	414.5	458.3	456.7	472.8	458.3	466.7	469.2	480	7.	411.7		418.3	433.7	141	425	427.5
	-	362.7 415.8	335.6 405.8	408.3	435	443.3	415.8	458	454.2	472.8		467	468.3	477.5	469.5 481	395.8	,	418.3	430.8	445.8	425	425
F-4	AVG		335.6	•	222.5	368.3 357.5	339	327.5 330.3	409.2 454.2	371.5	508.3 437.5 466.7	406.4	445	363.1	329.7	373.1	410.8 402.8	375.8	337.5 345.8		363.1	367.9
-40°F - 1745	3	364.2	335.8		219.2	368.3	337.5 339	327.5	409.2	332.8	508.3	426.7		369.2	324.2	371.7	410.8	377.5		,	359.2	360
TEMP. 1665 .	2	361.3	426.6 331.7 333.3		219.2	360	336.3	325	404.2	380	200	415	405.8	360	326.7	372.5	406.7	375	354.2	•	36q.8 369.2 359.2	362.8
MOT	-	410.8 362.5	331.7		393.6 229.2	402.5 344.2	395.6 343.3	427.8 338.3	414.2	401.7	426.6 304.2	377.5	424.7 484.2	360	338.3	375	422.8 390.8	375	345.8	,	369.8	380.8 362.8
8	AVG	410.8		405.6	393.6	402.5	395.6	427.8	420.8 428.3 429.2 426.1 414.2	444.4	426.6	416.7	424.7	425.8 360	421.9	4.13.3	422.8	394.9	416.3	419.9	425.5 408.8 405.8 409.2 407.9	414.2 405.8 412.5 410.8
BASELINE F-3 1602 - 1664	3	410	430.8	401.7 405.8 409.2	395.8	400	395	427.5	429,2	444.2	454	410.8	424	422.5	421.7	410.8	425	9	422.5 416.7	418.3 422.5 418.8	409.2	412.5
BASEL 1	2	408.3	428.3	405.8	394.2	405	397.5	425	428.3	448.3	435	414.2	425	425	425	413.3	422.5 425	394.6	422.5	422.5	405.8	405.8
	-	414.2	420.8	401.7	390.8	422.2 402.5	394.2	430.8 425	420.8	440.8	444.2 420.8	425	425	430	419.2	415.8	420.8	380	409.6	418.3	408.8	414.2
2	AVG		433.3	,	417.2	25.2	1.9		7.5	.3	1.2		425.8	440.5	425.5	4		415.7	•	,	5.5	32.8
F-2	4	430	43		~	4	4	44	45	453	446	420	425	44	45	426.4			446.4		42	-
	3 4	430 430	433.3	,		425	415.8 411.9 394.2	442.5 44	455.8 457.5	454.2 453.3 440.8 448.3 444.2 444.4 401.7	450	419.2 420		437.5	420.8	431.7	<u>.</u>	419.2 415	451.7 446	,	427.5 42	438.3 4
. +145°F - 1601	-		433.3 433.3	,	415.8 421.7		409.2	445.8 442.5 445	460	452.5	439.2 450	422.5 419.2	427.5 425 425	440.8 437.5	425.7 420.8 429	7.		411.3 419.2	150 451.7	,	425 427.5 42	429.2 438.3 432.8
. +145°F - 1601	3	430	433.3	,		419.2 422.5 425	410.8 409.2	446.7	456.7 460	453.3 452.5	439.2 450	418.3 422.5 419.2	5 425	437.5	420.8	431.7		419.2	451.7		427.5	430.8 429.2
HIGH TEMP. +145°F 1545 - 1601	3	429.2 430	433.3 433.3	400.6	415.8 421.7	422.5 425	409.2		420.5 456.7 460	439.4 453.3 452.5	421.1 443.3 439.2 450	410.5 418.3 422.5 419.2	422.2 425 427.5 425	440.8 437.5	423.9 430 425.7 420.8	426.4 425 422.5 431.7		411.7 416.7 411.3 419.2	417.2 437.5 450 451.7	435.3	424 425 427.5	430.8 429.2
- 1544 HIGH TEMP. +145°F	1 2 3	430.8 429.2 430	.8 433.3 433.3 433.3	395.8 400.6	414.2 415.8 421.7	.5 419.2 422.5 425	410.8 409.2	.8 446.7	456.7 460	453.3 452.5	439.2 450	5 418.3 422.5 419.2	425 427.5 425	443.3 440.8 437.5	430 425.7 420.8	4 425 422.5 431.7		416.7 411.3 419.2	.5 450 451.7		425 427.5	429.2
1544 HIGH TEMP. +145°F	AVG 1 2 3	410.8 404.7 430.8 429.2 430	414.2 417.8 433.3 433.3 433.3	8 400	385 389.5 414.2 415.8 421.7	395.8 392.5 419.2 422.5 425	385 389.2 410.8 409.2	415.8 417.8 446.7	420.5 456.7 460	433.3 439.4 453.3 452.5	421.1 443.3 439.2 450	8 410.5 418.3 422.5 419.2	420.8 422.2 425 427.5 425	435 433.6 443.3 440.8 437.5	420.8 423.9 430 425.7 420.8	426.4 425 422.5 431.7	1 1	8 411.7 416.7 411.3 419.2	417.2 437.5 450 451.7	434.2 435.3	415.8 410.6 424 425 427.5	412.5 413.5 430.8 429.2
BASELINE F-1 HIGH TEMP. +145°F 1482 - 1544 1545 - 1601	AVG 1 2 3	404.7 430.8 429.2 430	417.8 433.3 433.3 433.3	395.8 400	389.5 414.2 415.8 421.7	8 392.5 419.2 422.5 425	389.2 410.8 409.2	417.8 446.7	420.8 420.5 456.7 460	439.4 453.3 452.5	419.2 421.1 443.3 439.2 450	410.8 410.5 418.3 422.5 419.2	422.2 425 427.5 425	433.6 443.3 440.8 437.5	423.9 430 425.7 420.8	429.2 426.4 425 422.5 431.7		415.8 411.7 416.7 411.3 419.2	415.8 417.2 437.5 450 451.7	435.3	424 425 427.5	430.8 429.2
INE F-1 HIGH TEMP. +145°F - 1544 1545 - 1601	AVG 1 2 3	410.8 404.7 430.8 429.2 430	414.2 417.8 433.3 433.3 433.3	405 395.8 400	385 389.5 414.2 415.8 421.7	395.8 392.5 419.2 422.5 425	385 389.2 410.8 409.2	415.8 417.8 446.7	420.8 420.8 420.5 456.7 460	433.3 439.4 453.3 452.5	425 419.2 419.2 421.1 443.3 439.2 450	405.8 410.8 410.5 418.3 422.5 419.2	420.8 422.2 425 427.5 425	435 433.6 443.3 440.8 437.5	420.8 423.9 430 425.7 420.8	425 429.2 426.4 425 422.5 431.7	32	409.2 415.8 411.7 416.7 411.3 419.2	415.8 415.8 417.2 437.5 450 451.7	434.2 435.3	415.8 410.6 424 425 427.5	412.5 413.5 430.8 429.2



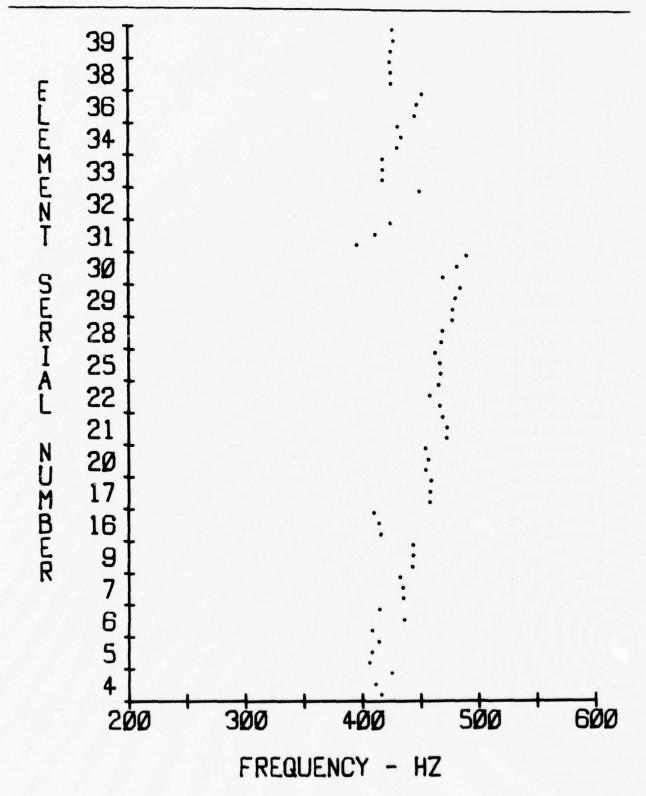
FREQUENCY VARIATION AT 0PSI DURING HIGH TEMPERATURE (+145°F) ENVIRONMENT REFERENCE TASK F-2



FREQUENCY VARIATION AT OPSI DURING BASELINE PRIOR TO LOW TEMPERATURE ENVIRONMENT: REFERENCE TASK F-3



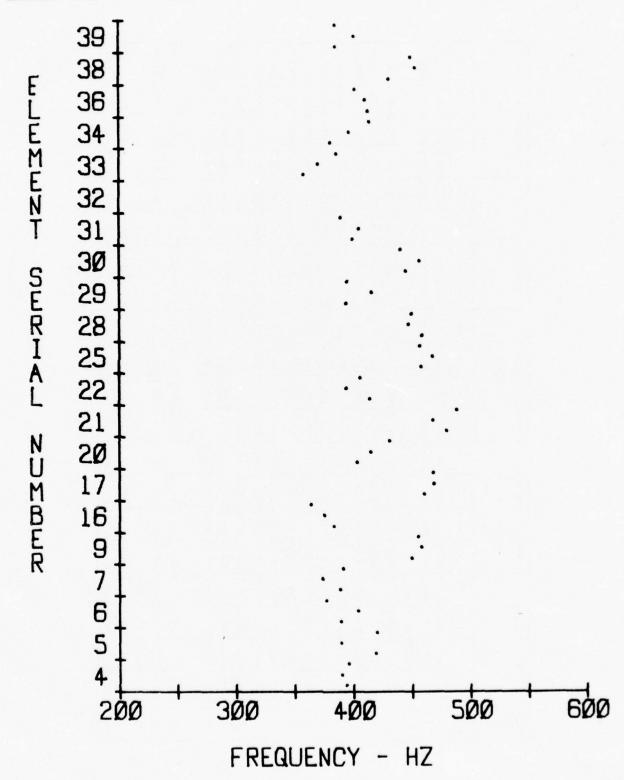
FREQUENCY VARIATION AT OPSI DURING LOW TEMPERATURE (-40°F) ENVIRONMENT REFERENCE TASK F-4



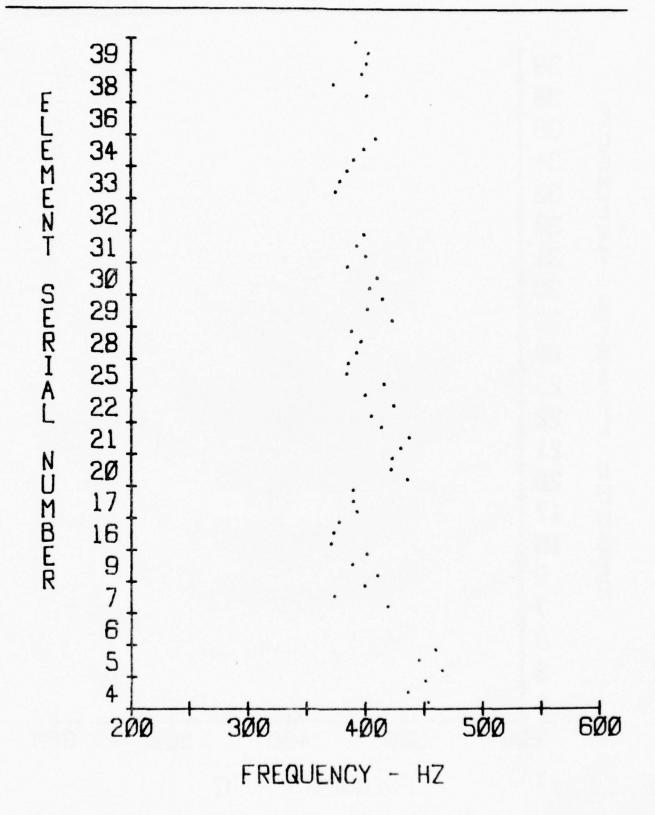
FREQUENCY VARIATION AT OPSI DURING BASELINE TEST USING N₂ (AFTER LOW TEMPERATURE TESTING) REFERENCE TASK F-5

O PSI

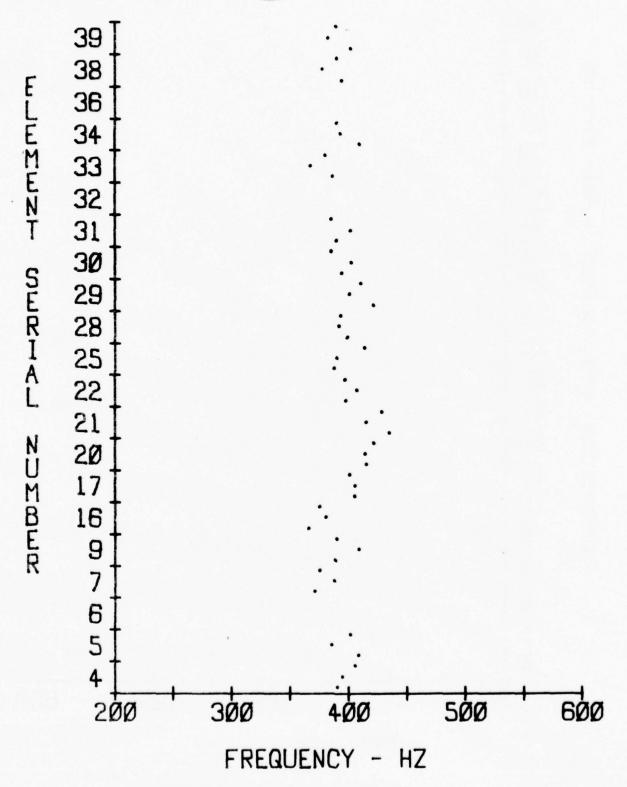
-			AVG	401.9	8	,	388.3	5.5	373.9	6.1	9.4	-	3.3	1.5	7.5	4.4	381.7	386.7		8.6	383.9		3.5	7.
-7-6			-	40	3 408		38	7 395	7 37	8 401	5 419.	8 421	3 403.	7 397	2 397	8 404	38	8 38		363.3 359.8	8 38		3 37	8 38
ACCELERATION F-7-4	15	2099	3	400	408.	1	385	389	366.7	405.	432.	420.	408.	396.	379.	395.	385	390.	•	363.	380.8	•	361.3 373.2	380.8 381
RATI	+3 AXIS	2043 -	2	3.3	393.3	,	380.8	406.7	389.2	0	5	3		383.3	2	7.	7.5	1.7	,	2	_	,	383.3	2.5
CELE	+	204		5 39			38	40	00	400	8 405	418.	7 400	5 38	412.	8 401	5 377.	.5 381		365	40		38	8 39
AC			-	386.1 412.5 393.	422.5	•	399	390	365.	400	420.8	424	401.7	412.	400	415.8	382.	387.		351	370	1	375	370.8 392.5
			AVG	6.1	395.3	,	385.7	4.2		3 406.6	3 422.9	4.4	1.8	8.9	389.2	6	1.9	_	,	369.3	399.9	,	386.7	387.7
-7-3			4		33		38	389.2 394.2	364.2 371.9	3 40	3 42	5 424.4	394.5 401.8	390.5 386.8 412.		401	7 391	3 391		2 36	33		38	38
ACCELERATION F-7-3	(18	2042	3	384.2	410	'	386	389.		408.	412.5 423.	427.			394.2	403	394.7	383.3	1	369.5	402	•	385	400
RAT	-3 AXIS	- 9861	2	390	390	,	371.2	33	82.8	412.5	2.5	422.5	6.7	18.5	380	5	380.7	404.7	,	8.3	75	1	80.8	31.7
CELE	Ċ	198	_	2	œ		3,	390.5 403	365.8 385.8	4		3	2 41	8 38		7 40	50	4		5 36	395.8 402		2 38	38
A			-	384.	385	1	400	390		399	433	423.	394.	380.	393.3	401.	400	385	'	370.	395	,	394	381.
2			AVG	396.7	398.3	,	378	396.1	373.9	404.2	8 414.2 421.7 417.2	429.2 426.4	397.2 400.7 394.2 416.7	414.2 397.2 380.8 389.	393.3 394.7	410.8 411.2 401.7 401	394.1 400.	392.5		378.2 370.5 368.3	397.8		37.5	391.7 381.3 381.7 400
17							3	m m		4	7	2 4	2 4(2 36	33	8	3	3		40	3		7	36
NO.	(18	1929 - 1985	3	405.8	401.7	,	375	330	375	40	421.	429.		414.	393.	410.	385	385	•	380	38	'	390.	380
RAT	-1 AXIS	- 6	2	394.2	35		8.3	3.5	380.8	5.8	4.2	415	7.5	0	391.7	-	403	402.5	,	367.5	393,3	,	7.5	2.5
1 4	•	92		39	38		200	9	88	$\stackrel{\circ}{=}$	-	=	0	23	2	0	0	0		9	01			92 1
CE		-			3		00	2	00	8	8		5 407	2	(-)	7	2	4		~	3		2	5
ACCELERATION F-7-2			1	390	408.3	,	370.8	389.2	00	405.8			397.5	387.5	399	421.7 4	394.2 4	390	,			.1	394.2 3	402.5
-			1 4VG 1	2	56.7 408.3		97.7 370.8	00.6 389.2	00	11.1 405.8			10.3 397.5	387.5	8 399	4.1 421.7 4	394.2	2 390	,	386.7		1	11.1 394.2 3	9.2 402.5 3
-	-		AVG 1	446.5 390	456.7 408.3 385	'	397.7 370.8 388.3 375	7 400.6 389.2	3 374.1 365.8	391.1 405.8 405.8	3 427.5 415.	2 427.8 435	410.3 397.5 4	в 395.7 387.5 390	399	8 414.1 421.7 401	2	390	,	3110 316.7	400.3 410	,	3 391.1 394.2 3	5 399.2 402.5 3
-	(IS	1928	3 AVG 1	451 446.5	460 456.7 408.3		400 397.7 370.8	401.7 400.6 389.2 409.2	378.3 374.1 365.8	390 391.1 405.8	423.3 427.5 415.	414.2 427.8 435	400 410.3 397.5 4		388.5 392.8 399		385 400 394.2	400 398.2 390		385. и 300 386.7			398.3 391.1 394.2 3	392.5 399.2 402.5 3
-	+1 AXIS	- 1928		451 446.5	460		400	2	3 378.3 374.1 365.8	390	5 423.3 427.5 415.	414.2 427.8 435	400 410.3 397.	5 385.	7 388.5 392.8 399		8 385 400 394.2	3 400 398.2 390		385. и 300 386.7	410 400.3 410		73.3 398.3 391.1 394.2 3	03.3 392.5 399.2 402.5 3
-	+1 AXIS	1928	3	8 435.8 451 446.5	445 460	1	2 374 400	8 389.2	8 373.3 378.3 374.1 365.8	3 390 390	422.5 423.3 427.5 415.	8 438.3 414.2 427.8 435	8 425 400 410.3 397.	7 384.5 385.	3 396.7 388.5 392.8 399	402.5 415.	2 410.8 385 400 394.2	. 2 393.3 400 398.2 390		379.2 385.8 380 386.7	8 400 410 400.3 410		.7 373.3 398.3 391.1 394.2 377.5 390.7 387.5 394.2 380.8 385	.7 403.3 392.5 399.2 402.5 3
ACCELERATION F-7-1 ACCE	+1 AXIS	- 1928	3	452.8 435.8 451 446.5	465 445 460		419.2 374 400	410.8 389.2	370.8 373.3 378.3 374.1 365.8	393.3 390 390	436.7 422.5 423.3 427.5 415.	430.8 438.3 414.2 427.8 435	405.8 425 400 410.3 397.	416.7 384.5 385.	393.3 396.7 388.5 392.8 399	424 402.5 415.	410.8 385 400 394.2	401.2 393.3 400 398.2 390		375 379.2 385.8 380 386.7	390.8 400 410 400.3 410		401.7 373.3 398.3 391.1 394.2 3	401.7 403.3 392.5 399.2 402.5 3
-	+1 AXIS	- 1928	3	9 452.8 435.8 451 446.5	5 465 445 460	06	9 419.2 374 400	.6 410.8 389.2	370.8 373.3 378.3 374.1 365.8	393.3 390 390	8 436.7 422.5 423.3 427.5 415.	2 430.8 438.3 414.2 427.8 435	2 405.8 425 400 410.3 397.	.5 416.7 384.5 385.	2 393, 3 396, 7 388, 5 392, 8 399	.9 424 402.5 415.	404.2 410.8 385 400 394.2	6 401.2 393.3 400 398.2 390		. 9 375 379.2 385. н 3го 386.7	8 390.8 400 410 400.3 410	6.80	45.3 401.7 373.3 398.3 391.1 394.2 3	90.9 401.7 403.3 392.5 399.2 402.5 382.5 390
-	+1 AXIS	1872 - 1928	AVG 1 2 3	8 392.9 452.8 435.8 451 446.5	409.5 465 445 460	.7 390	384.9 419.2 374 400	454.6 410.8 389.2	374.1 370.8 373.3 378.3 374.1 365.8	3 466.1 393.3 390 390	416.8 436.7 422.5 423.3 427.5 415.	2 479.2 430.8 438.3 414.2 427.8 435	7 405.2 405.8 425 400 410.3 397.	461.5 416.7 384.5 385.	452.2 393.3 396.7 388.5 392.8 399	401.9 424 402.5 415.	8 448 404.2 410.8 385 400 394.2	398.6 401.2 393.3 400 398.2 390		7 371.9 375 379.2 385.8 380 386.7	397.8 390.8 400 410 400.3 410	5 408.	445.3 401.7	390.
F-6 ACCELERATION F-7-1	+1 AXIS	- 1928	1 2 3	395.8 392.9 452.8 435.8 451 446.5	420 409.5 465 445 460	376.7	391.7 384.9 419.2 374 400	455 454.6 410.8 389.2	370.8 373.3 378.3 374.1 365.8	468.3 466.1 393.3 390 390	431.2 416.8 436.7 422.5 423.3 427.5 415.	489.2 479.2 430.8 438.3 414.2 427.8 435	406.7 405.2 405.8 425 400 410.3 397.	.5 416.7 384.5 385.	450 452.2 393.3 396.7 388.5 392.8 399	.9 424 402.5 415.	440.8 448 404.2 410.8 385 400 394.2	390 398.6 401.2 393.3 400 398.2 390		346, 7 371.9 375 379.2 385.8 380 386.7	415 397.8 390.8 400 410 400.3 410	402.5 408.	450 445.3 401.7	385 390.9 401.7 403.3 392.5 399.2 402.5 3
F-6 ACCELERATION F-7-1	+1 AXIS	- 1871 1872 - 1928	AVG 1 2 3	.5 395.8 392.9 452.8 435.8 451 446.5	2 420 409.5 465 445 460	2 376.7	8 391.7 384.9 419.2 374 400	7 455 454.6 410.8 389.2	364 374.1 370.8 373.3 378.3 374.1 365.8	2 468.3 466.1 393.3 390 390	8 431.2 416.8 436.7 422.5 423.3 427.5 415.	3 489.2 479.2 430.8 438.3 414.2 427.8 435	3 406.7 405.2 405.8 425 400 410.3 397.	.3 457 461.5 416.7 384.5 385.	.5 450 452.2 393.3 396.7 388.5 392.8 399	7 395 401.9 424 402.5 415.	.5 440.8 448 404.2 410.8 385 400 394.2	8 390 398.6 401.2 393.3 400 398.2 390		8 386, 7 371, 9 375 379, 2 385, 8 380 386, 7	.5 415 397.8 390.8 400 410 400.3 410	8 402.5 408.	2 450 445.3 401.7	385 390.
ACCELERATION F-7-1	+1 AXIS	1872 - 1928	3 AVG 1 2 3	3 389.5 395.8 392.9 452.8 435.8 451 446.5	2 389.2 420 409.5 465 445 460	2 404.2 375.7	2 373.8 391.7 384.9 419.2 374 400	458.7 455 454.6 410.8 389.2	3 375 364 374.1 370.8 373.3 378.3 374.1 365.8	.8 469.2 468.3 466.1 393.3 390 390	3 415.8 431.2 416.8 436.7 422.5 423.3 427.5 415.	468.3 489.2 479.2 430.8 438.3 414.2 427.8 435	5 394.3 406.7 405.2 405.8 425 400 410.3 397.	2 468,3 457 461.5 416.7 384.5 385.	2 447,5 450 452,2 393,3 396,7 388,5 392,8 399	416.7 395 401.9 424 402.5 415.	8 457.5 440.8 448 404.2 410.8 385 400 394.2	405.8 390 398.6 401.2 393.3 400 398.2 390		3 370.8 346.7 371.9 375 379.2 345.4 340 386.7	8 397.5 415 397.8 390.8 400 410 400.3 410	3 410.8 402.5 408.	.7 454.2 450 445.3 401.7	.8 402 385 390.
F-6 ACCELERATION F-7-1	+1 AXIS	- 1871 1872 - 1928	3 AVG 1 2 3	.5 395.8 392.9 452.8 435.8 451 446.5	389.2 420 409.5 465 445 460	2 376.7	8 391.7 384.9 419.2 374 400	7 455 454.6 410.8 389.2	375 364 374.1 370.8 373.3 378.3 374.1 365.8	469.2 468.3 466.1 393.3 390 390	8 431.2 416.8 436.7 422.5 423.3 427.5 415.	3 489.2 479.2 430.8 438.3 414.2 427.8 435	394.3 406.7 405.2 405.8 425 400 410.3 397.	.3 457 461.5 416.7 384.5 385.	.5 450 452.2 393.3 396.7 388.5 392.8 399	7 395 401.9 424 402.5 415.	457.5 440.8 448 404.2 410.8 385 400 394.2	8 390 398.6 401.2 393.3 400 398.2 390		8 386, 7 371, 9 375 379, 2 385, 8 380 386, 7	397.5 415 397.8 390.8 400 410 400.3 410	8 402.5 408.	2 450 445.3 401.7	402 385 390.
BASELINE F-6 ACCELERATION F-7-1	0 +1 AXIS	- 1871 1872 - 1928	3 AVG 1 2 3	3 389.5 395.8 392.9 452.8 435.8 451 446.5	2 389.2 420 409.5 465 445 460	2 404.2 375.7	2 373.8 391.7 384.9 419.2 374 400	458.7 455 454.6 410.8 389.2	3 375 364 374.1 370.8 373.3 378.3 374.1 365.8	.8 469.2 468.3 466.1 393.3 390 390	3 415.8 431.2 416.8 436.7 422.5 423.3 427.5 415.	468.3 489.2 479.2 430.8 438.3 414.2 427.8 435	5 394.3 406.7 405.2 405.8 425 400 410.3 397.	2 468,3 457 461.5 416.7 384.5 385.	2 447,5 450 452,2 393,3 396,7 388,5 392,8 399	416.7 395 401.9 424 402.5 415.	8 457.5 440.8 448 404.2 410.8 385 400 394.2	405.8 390 398.6 401.2 393.3 400 398.2 390		3 370.8 346.7 371.9 375 379.2 345.4 340 386.7	8 397.5 415 397.8 390.8 400 410 400.3 410	3 410.8 402.5 408.	.7 454.2 450 445.3 401.7	.8 402 385 390.



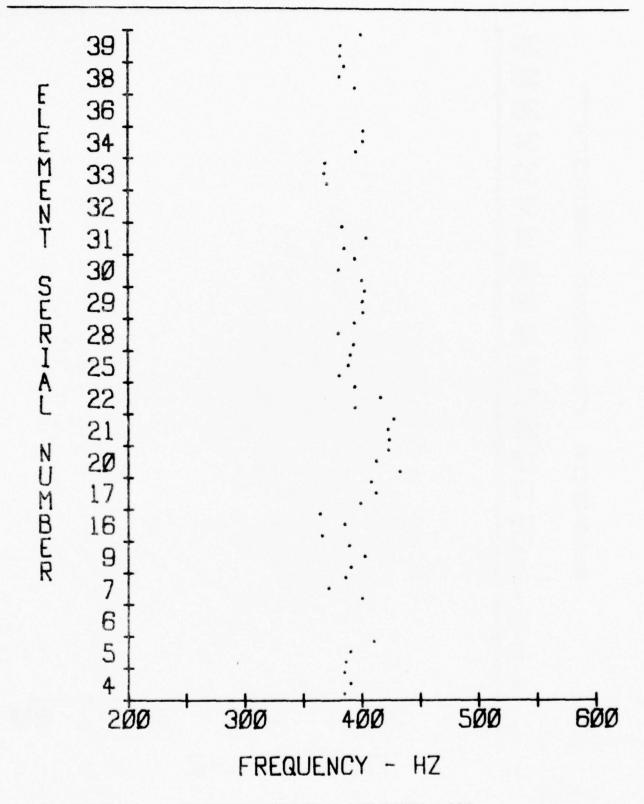
FREQUENCY VARIATION AT 0 PSI, DURING BASELINE TEST PRIOR TO ACCELERATION ENVIRONMENT REFERENCE TASK F-6.



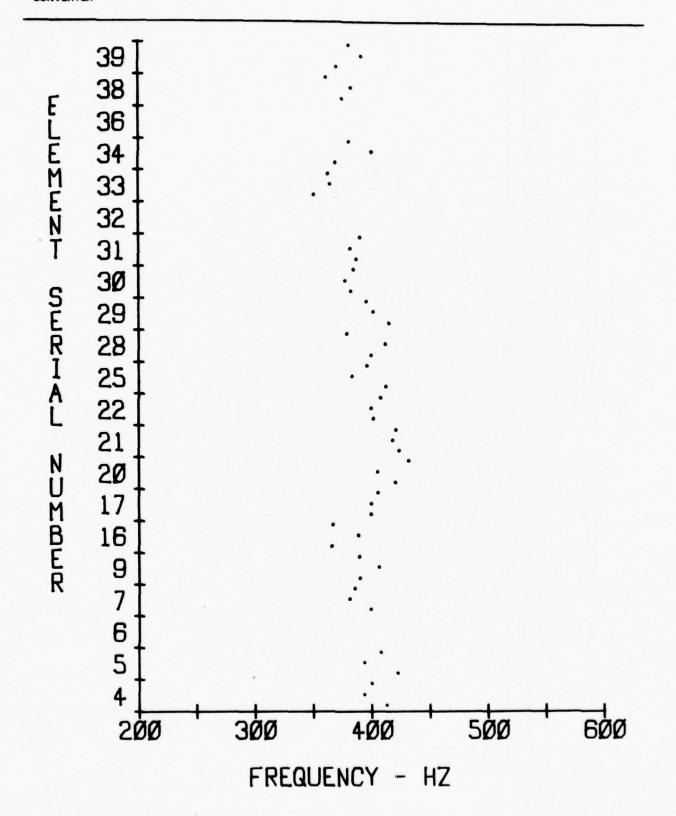
FREQUENCY VARIATION AT 0 PSI DURING +1 AXIS ACCELERATION ENVIRONMENT, REFERENCE TASK F-7-1.



FREQUENCY VARIATION AT 0 PSI DURING -1 AXIS ACCELERATION ENVIRONMENT, REFERENCE TASK F-7-2

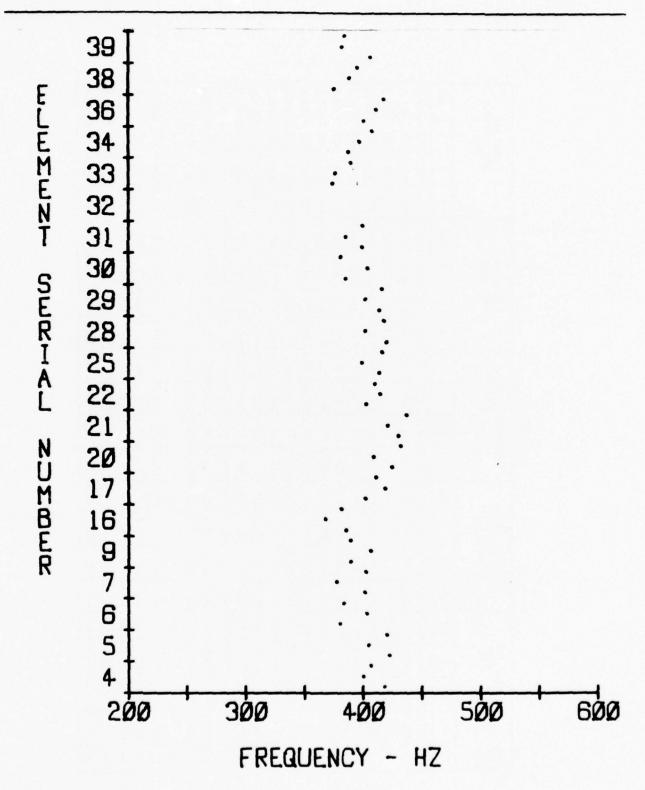


FREQUENCY VARIATION AT 0 PSI DURING -3 AXIS ACCELERATION ENVIRONMENT, REFERENCE TASK F-7-3.

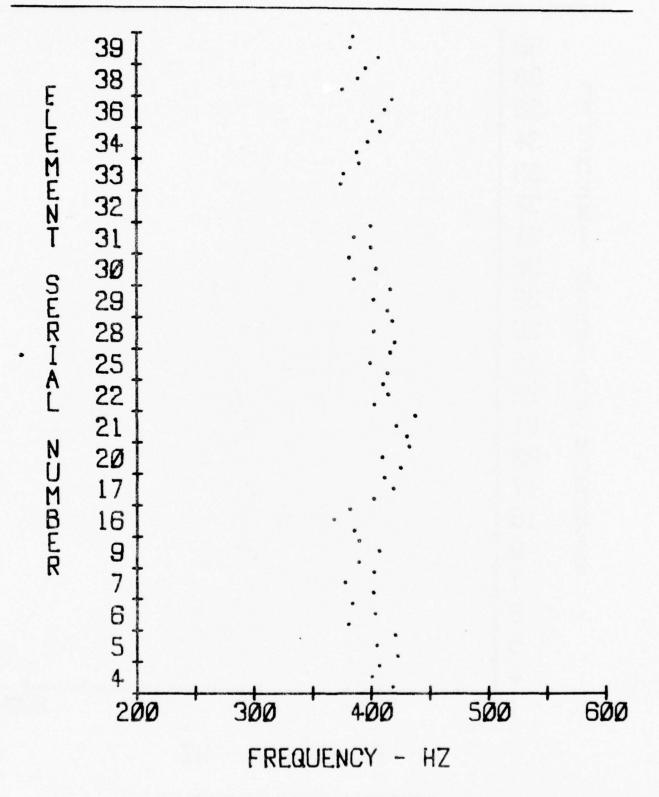


FREQUENCY VARIATION AT 0 PSI DURING +3 AXIS ACCELERATION ENVIRONMENT, REFERENCE TASK F-7-4.

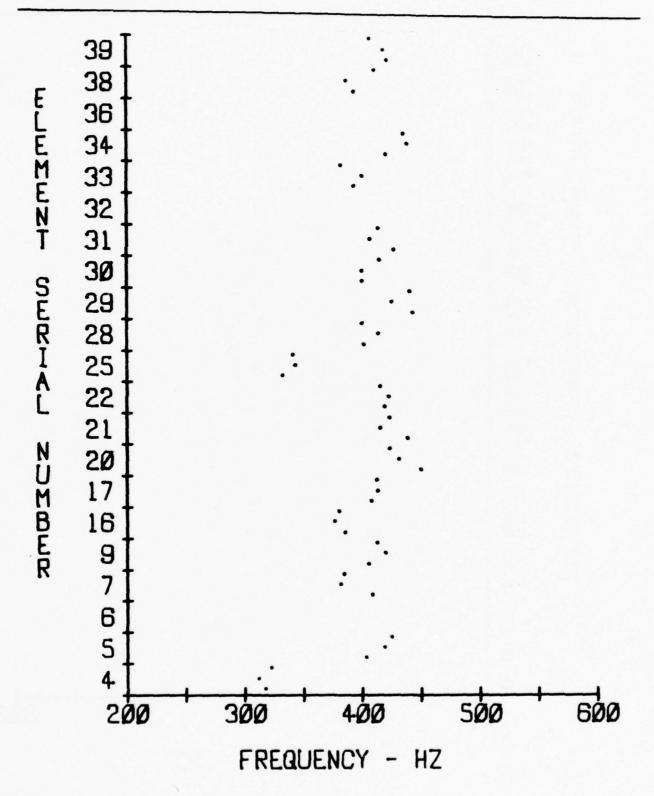
	. 2	AVG	319.4	411.6	396.7	381.4	399.3	378.1	415.1	368.4	422,5	413.9	321.9	411.4	402.8	395.3	400		379.2	392.2	403.6	388.3	393.9
	Baseline 2370 - 2552 F-11	3	318.3	414.2	400	387.5	400	375	413.7 416.7	366.7	423.3	415	323.3	409.2 011.4	401.7 401.7 402.8	394.2 391.7 395.3	401.7 400		375	390	406.7	385.8	394.2
	84 2370	2	322.5	411.3	394.2	371.7 387	399		413.7	369.2	421.7	414.2	319.2 323.3 323.3 321.9	410	401.7	394.2	400	,	381.7	393,3	402.5 401.7 406.7 403.6	389.2	393.3
		-	395.7 395.3 316.7 310.8 322.5 316.7 331.7 333.3 331.7 332.2 317.5 322.5 318.3	413.9 409.2 411.3 414.2 411.6	403.3 388.3 405.8 399.1 395.8 394.2 400	385	399	377.5 380.8 385.8 379.2 380	415	430.8 423.3 434.7 423.3 432.5 437.5 431.1 369.2 369.2 366.7 368.4	418.3 425.3 422.5 421.7 423.3 422.5	409.1 419.2 410.8 414.2 414.7 419.2 422.5 415 418.9 425 441.7 410.8 425.8 412.5 414.2 415	319.2	415	405	400	389.2 409.2 402.8 427.5 406.7 414.2 416.1 419.2 407.5 423.3 416.7 398.3 400	,	380.8 394.3 401.7 392.3 380.8 381.7 375	431.7 412.5 435.8 404.2 417.5 393.3 393.3 390	402.5	386.3 390 389.2 385.8 388.3	404.2 420.8 413.3 394.2 393.3 394.2 393.9
		AVG	332.2	413.9	399.1	395.5	403.9 399	385.8	404.2 423.3 419.2 415	431.1	425.3	425.8	330	410	440.8 436.4 412.5 430.8 414.2 419.2	407.5 409.7 400	416.7		392,3	417.5	420	386.3	413.3
	Baseline 07 - 2369 F-10	3	331.7	415	405.8	395	401	380.8	423.3	437.5	418.3	410.8	311.7	400	414.2	407.5	423.3	,	401.7	404.2	420	374	420.8
	Baseline 2307 - 2369 F-10	2	333.3		388.3	405.8	395.8 401	377.5	404.2	432.5		441.7	335.8	405.3 408.3 421.7 400	430.8		407.5	ı	394.3	435.8	425	410	404.2
		-	331.7	416.7	403.3	385.8		399	430	423.3	432.5	425	342.6	408.3	412.5	421.7	419.2	,	380.8	412.5	415		
	E	AVG	316.7	415.8 416.7 410	,	391.2	412.5 412.8 415	380.3 399	411.4	434.7	426.1 432.5 425	418.9	338.6	405.3	436.4	415.3 405.1 421.7 400	416.1	,		431.7	,	397.1	415.6
	n Rando 2306 F-9-2	3	322.5	425	,	384.2	412.5	980	412.5	423.3	424	A15	340.8	400	8.045	415.3	414.2	,	381.7 392			411.3	406.7
O PSI	Vibration Random 2235 - 2306 Axis F-9-2	2	310.8	419.2	,	381.2		376	413.3	430.8		422.5	343.3	414.2		400	406.7	,	401	439.2	,	386.7	418.3
	Vib 2 Axi	-	316.7	403.3	,	383.3 402.5 394.9 408.3 381.2 384.2 391.2 385.8 405.8 395	397.6 405.8 420		408.3	450	439.2	419.2	331.7 343.3 340.8 338.6 342.6 335.8 311.7 330	400.3 401.7 414.2 400	431.7 414.2 413.6 443.3 425		427.5	,	381.7 393.3 401	416.7 414.5 420.8 439.2 435	,	401.7 403.6 393.3 386.7 411.3 397.1 375	397.8 421.9 418.3 406.7 415.6 415
	E	AVG	395.3	403.9	,	394.9	397.6	371.7	413.7		438.4	414.7	320	400.3	413.6	392.5 397.2 400	402.8	,	381.7	414.5	,	403.6	397.8
	Vibration Random 2163 - 2234 Axis 3 F-9-1	3	395.7	404.2	,	402.5	400	383.3	405,8	417.5	7. [44	414.2	332.5	385	414.2	392.5	409.2	1	370	416.7	,	401.7	400
	Vibration Ram 2163 - 2234 Axis 3 F-9-1	2		413.3	,	383.3	401	369.2	428.3	443.3	439.2	410.8	308.3		431.7	400	388.2	,	400	400	,	400	
	V1b 2 Axi	-	406.7 408.1 390.3 400	394.2	i		391.7 401	367.5 381.7 378.1 362.5 369.2 383.3 371.7 385	410.8 410.8 407.5 428.3 405.8 413.7 408.3 413.3 412.5 411.4 430	432.5 422.2 423.3 443.3 417.5 428	420.8 437.5 429.2 434.2 439.2 441.7 438.4 439.2 415	419.2	416.7 409.8 319.2 308.3 332.5 320	405.8		399	410	,	375	426.7	,	409.2	392.5
		AVG	408.1	415.7	388.9	402.5 393.7 399	400	378.1	410.8	422.2	429.2	409.1	409.8	413.3	416.7 410.7 395		395		011	397.8	410.4	386.7	390.9
	e F-8 2162	3	406.7	420.4	403.3 383.3 388.9	405.5	389.2	381.7	410.8	432.5	437.5		416.7	418.3	416.7	380.8 390	400	,	1111	408.3	418.3 410.4	395.8	384.2
	Baseline F-8 2100 - 2162	2	400	422.5 404.2 420.4 415.7 394.2 413.3 404.2 403.9 403.3 419.2 425	403.3	377	389.2 406.7 389.2 395	367.5	419.2	409	420.8	414.7 410	399	401.7 418.3 413.3 405.8 410	401.7	404.2	385	,	376	387.5 397.5 408.3 397.8 426.7 400	412	389.2 395.8 386.7 409.2 400	406.7 381.7 384.2 390.9 392.5 401
	,	-	417.5 400	422.5	380	401.7	389.2	385	402.5	425	430	402.5	413.7	420	413.7	385	400	,	3/4	387.5	401	375	406.7
	Freq @ 0 PSI	S/N	4	2	9	7	6	16	17	20	21	22	52	28	59	30	31	32	33	34	36	38	39



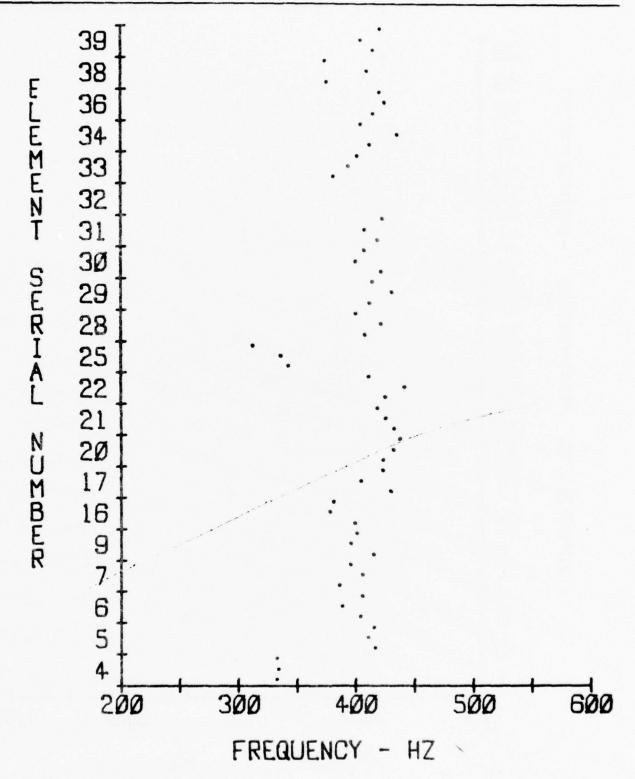
FREQUENCY VARIATION AT 0 PSI DURING BASELINE TEST PRIOR TO VIBRATION ENVIRONMENT, REFERENCE TASK F-8



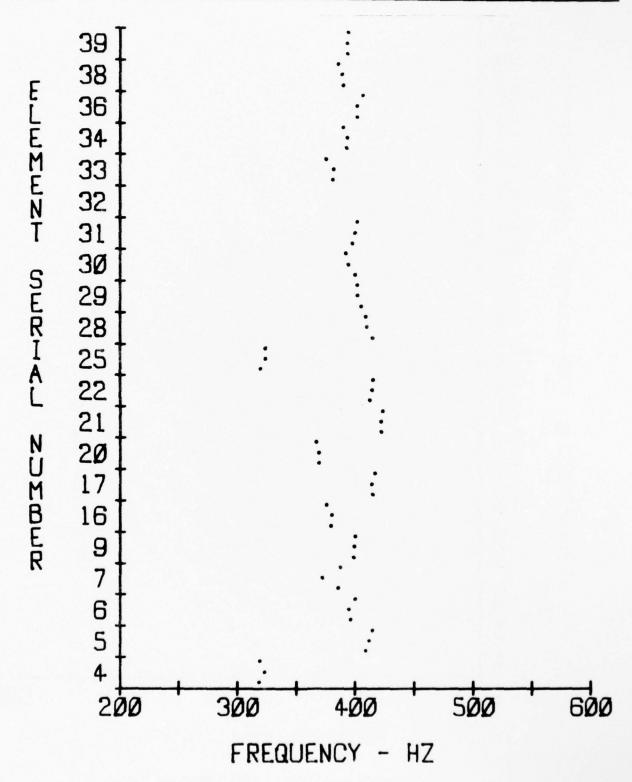
FREQUENCY VARIATION AT 0 PSI DURING AXIS 3 OF RANDOM VIBRATION ENVIRONMENT, REFERENCE TASK F-9-1



FREQUENCY VARIATION AT 0 PSI DURING AXIS 1 OF RANDOM VIBRATION ENVIRONMENT, REFERENCE TASK F-9-2



FREQUENCY VARIATION AT 0 PSI DURING BASELINE TEST, AFTER RANDOM VIBRATION ENVIRONMENT, REFERENCE TASK F-10

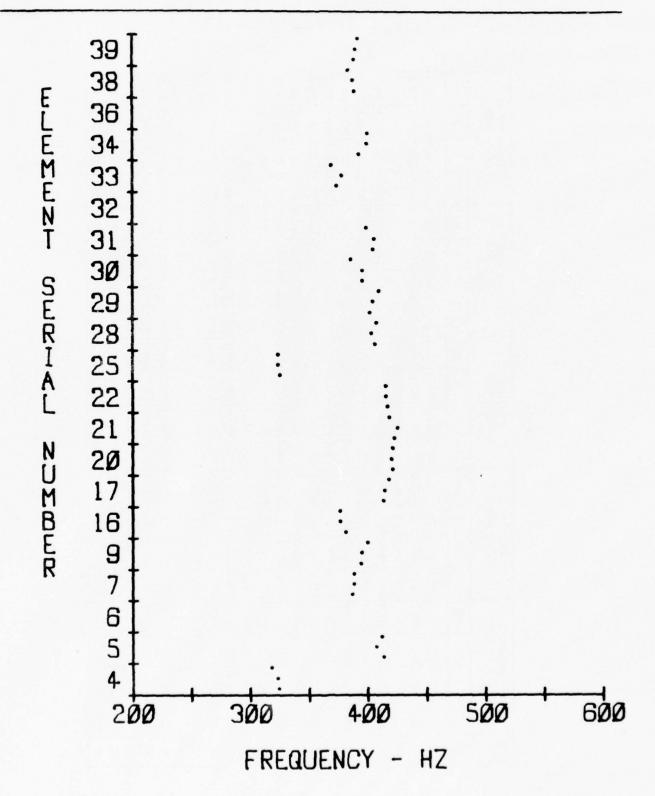


FREQUENCY VARIATION AT 0 PSI DURING BASELINE TEST PRIOR TO ACOUSTICAL NOISE ENVIRONMENT, REFERENCE TASK F-11

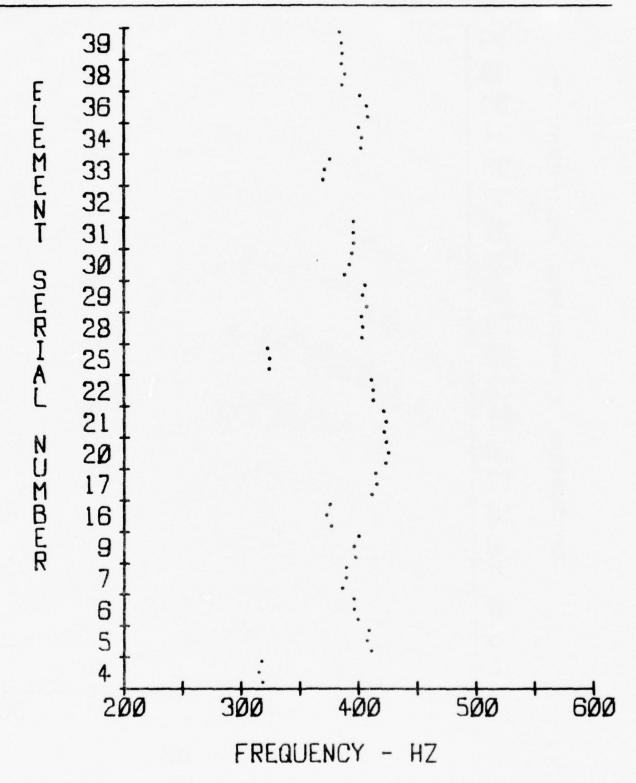
SEST AVAILABLE COPY

Freq.		Acoustical Noise 2370 - 2552 F-12	1 Not	e s		Baseline 2370 - 25 F-13	Baseline 2370 - 2552 F-13			Baseline 2553 - 2615 F-14	ine 2615		Al	Altitude : 2616 - 2 F-15-1	90K	Ft	A	Altitude 50K Ft 2616 - 2906 F-15-2	50K F 2906 -2	4
S/N	-	2	3	AVG	-	2	3	AVG	-	2	6	AVG	-	2	9	AVG	-	2	3	AVG
4	323.3	322.5	317.5	321.1	317.5	314.2	316.7	316.1	303.3	311.7	317.5		248.3	310.8 248.3 273.3 250	250	257.2	257.2 261.3	272.5	250	261.3
5	413.7	406.7	411.7	410.7	410.8	410.8 406.7 408.3	408.3	408.6	409.2 400		406.7	406.7 405.3 366.7	366.7	336.7 350	350	351.1	341.7	353,3	362.5	352.5
9	1	,	,	1	399	395.8	395.8	396.9	396.7	380.8	393.3	390.3	,	,	i	1	ı	,	1	
7	386.7	388.3	388.3	387.8	385.8	389.2	3.69.2	388.1	373.3	360	365	366.1	339.2	317.5	330	328.9	325	339.2	320.8	328.3
6	394.2	394.7	400	396.3	397.5	395.8 400	400	397.7 400	400	380	395	391.7	365	366.7	366.7 357.5	363.1	355.8	350	362.5	356.1
16	380.8	376	376	377.6	376	372.2	375	374.4	365.8	370.8	377.5	371.4	370	370	362.5	367.5	375	365	365.8	368.6
17	413.8	414.2	417.5	415.2	411.2	415	414.2	413.5	418.3 400	400	412.5	412.5 410.3	375	388.3	385.8	383	385.8	391.7	369.7	382.4
20	420.8	420	420.8	420.5	423.3	425	423.3	423.9	408	428.3	409.2	415.2	381.7	384.2	2 388.3	384.7	390	371.7	375	378.9
12	422.5	425	418.3	421.9	.9 421.2	2 423.3	420.8	421.8	411.7	407.5		416.7 411.9	368.3	383.8 368.	3	373.5	383.3	383	370.8	379
22	416.7	415	415	415.6	412.5	412.5	410.8	411.9	415.8	425	412.5	417.8	375	361.7	368.3	368.3	364.2	384.2	366.7	371.7
52	325	323.3	323,3	323.9	323.3	324	321.7	323	323.3	329.2	318.3	318,3 323.6	302.5	275	300	292.5	289.5	285	288.2	287.8
88	406.7	403.3	407.5	405.8	403.3	403.3	402.5	403	401.7	400	401.7	401.7 401.1	370.8	361.7	375	369.2	355.8	365.8	375	365.5
53	401.7	404.2	410	405,3	406.7	403.3	405	405	414.2	412.5	405	410.6	376	394.2	365	378.4	382.5	394.2	383.3	386.7
30	395.8	395.8	385.8	392.5	388.3	391.7	394.2	391.4	393.3	415	389.2	389.2 399.2	330	329.2 314.	314.2	324.5	327.5	323.3	314.2	321.7
3	405	405.8	399	403.3	395.8	395.8	395.8	395.8		390.8 420.8	394.2	394.2 401.9	343.3	328.4 345	345	338.9	330	353,3	331.7	338.3
32	,	,	,	,	,	ı	,	1	,		1	,	369.2	406.7 414.	414.2	396.7	412.5	406.7	411.7	410.3
33	374	378.3	369.2	373.8	369.7	370.8	375	371.8	381.7	382.5	390	384.7	358.3	370.8	363.3	364.1	370.8	370	367	369.3
34	393.3	400	400	397.8	402.5	402.5	400	401.7	394.2		396.3 406.7	399.1	353.3	363.3 350	350	355.5	355.8	367.5	339	354.1
36	,	,	t	1	408.3	406.7	401	405.3	435	459.2	433.3 442.5	442.5			,	,		,		,
38	389.2	387.5	383.8	386.8	385.8	388.3	385	386.4	381.7		389.2	385.6	295.8	385.8 389.2 385.6 295.8 305.8 330	330	310.5	341.7	294.5	310	315.4
39	389.2	390	391.7	391.7 390.3	385.8	385	383.3	3 384.7	387.5 390	390	391.7	391.7 389.7 350	350	344.2 360	360	351.4 335	335	353.3	353.3 360.8	349.7

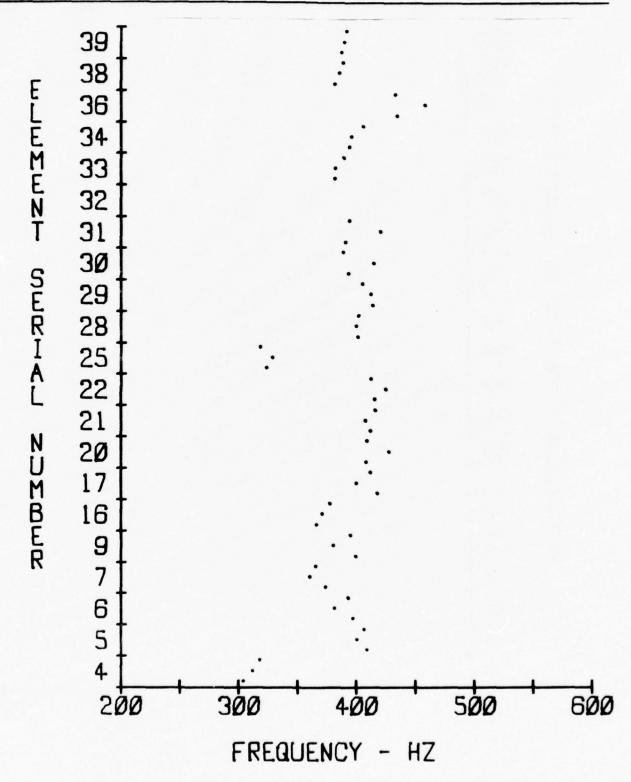
O PSI



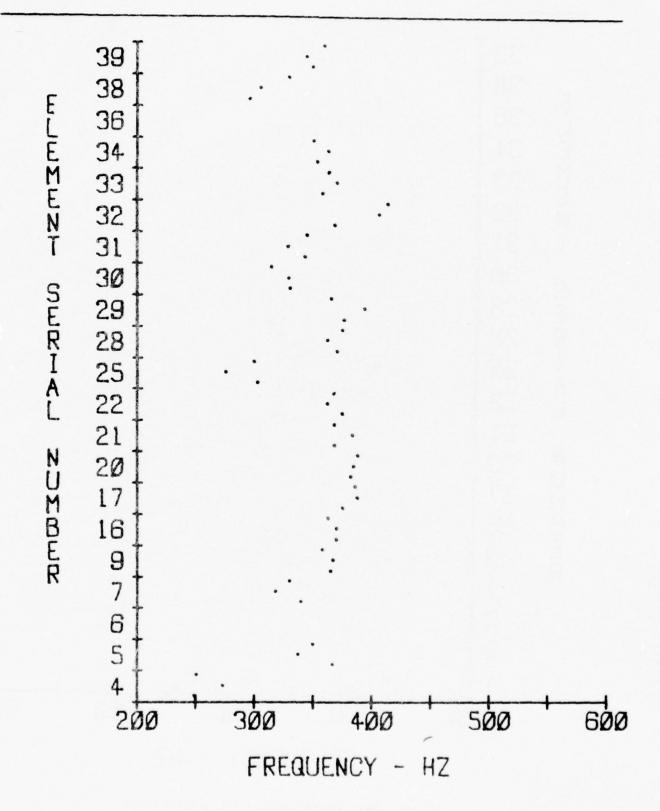
FREQUENCY VARIATION AT 0 PSI DURING ACOUSTICAL NOISE ENVIRONMENT, REFERENCE TASK F-12



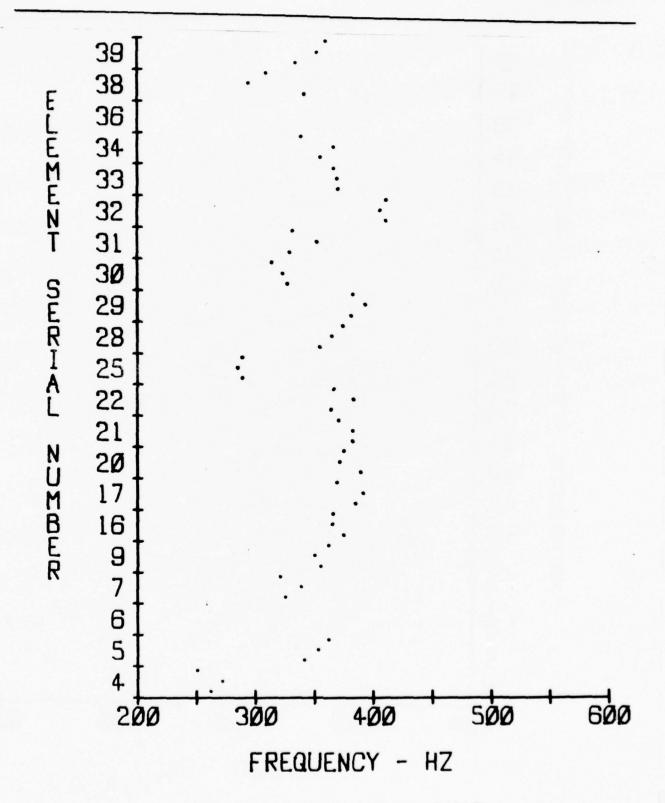
FREQUENCY VARIATION AT 0 PSI. DURING BASELINE TEST AFTER ACOUSTICAL NOISE ENVIRONMENT, REFERENCE TASK F-13



FREQUENCY VARIATION AT 0 PSI DURING BASELINE TEST PRIOR TO ALTITUDE ENVIRONMENT REFERENCE TASK F-14



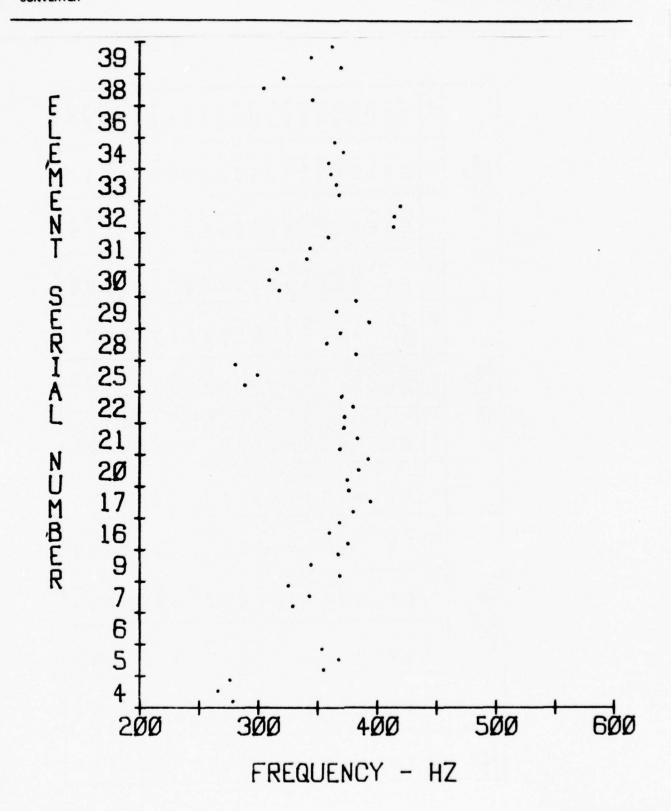
FREQUENCY VARIATION AT 0 PSI, DURING 90K FT ALTITUDE ENVIRONMENT, REFERENCE TASK F-15-1



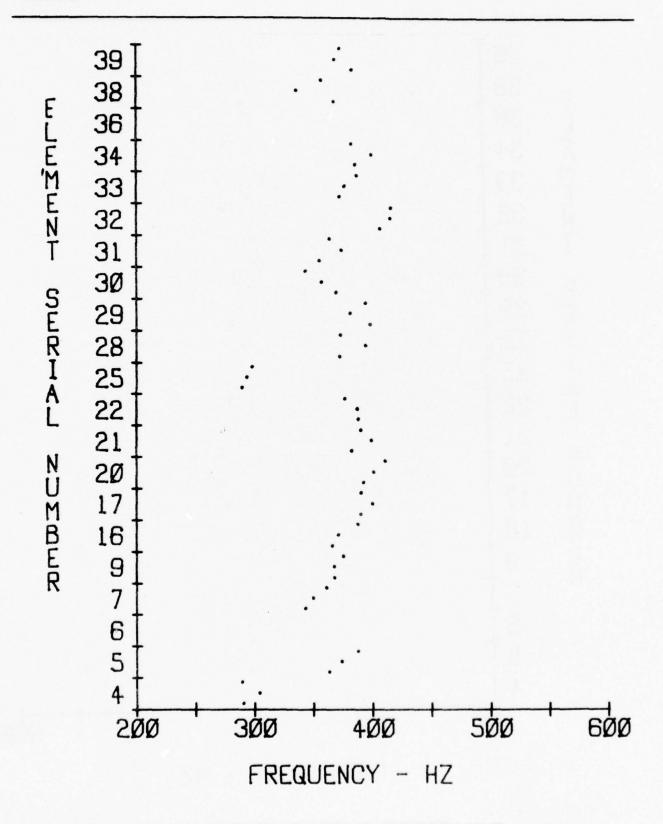
FREQUENCY VARIATION AT 0 PSI, DURING 50K FT ALTITUDE ENVIRONMENT, REFERENCE TASK F-15-2

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e	-	٦	٠	

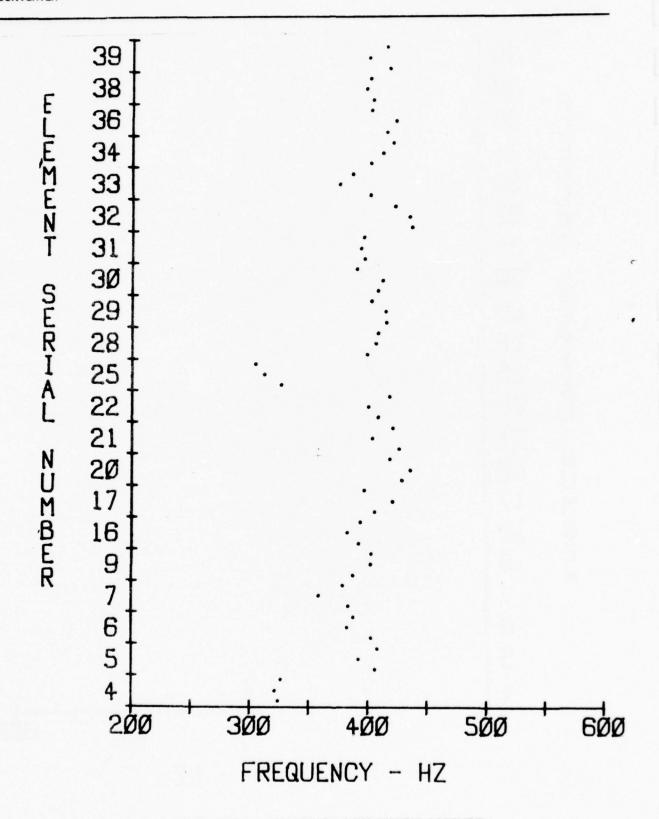
Freq.		Altitu 2616 F-1	Altitude 25KFT 2616 - 2906 F-15-3			A1ti 261	Altitude 10KFT 2616 - 2906 F-15-4			8a 2616	Baseline 2616 - 2906 F-16	
S/N	-	2	3	AVG	-	2	3	AVG		2	3	AVG
4	278.3	265.8	276	273.4	290	304.2	289.5	294.5	324	320.8	326	323.6
y,	355	368.3	353.3	358.9	363.3	374	387.5	374.9	406.3	391.7	408.3	402.1
9		,		,	,		,		402.5	382.5	387.5	39
7	329.2	343.3	325	332.5	343	350	360.8	351.3	383.3	358.3	379.2	373.6
6	369.2	344.2	368.3	360.6	368.3	367.5	375	370.3	387.5	402.5	402.5	397.5
16	376	360	369.2	368.4	365.8	370.8	387.5	374.7	391.7	382.5	393.7	389.2
17	380.8	395	376.7	384.2	390	400	390	393,3	405.8	420.8	396.7	407.8
20	375	385	393.3	384.4	392.5	401	410.8	401.4	428.4	435.8	418.3	427.5
21	369.5	384.2	372.5	375.3	382.5	399	390	330.5	426	403.3	420.8	416.7
22	373.3	380.8	370.8	374.9	387.5	386.7	376	383.4	408.3	400	418.3	408.9
25	289.2	300	280.8	290	289.2	293.3	862	293.5	326	311.7	304.2	313.9
288	383.3	358.3	370	370.5	372.5	394.2	373	379.9	399	406.7	408.3	404.7
59	394.2	366.7	383.3	381,4	398	380.8	394.2	391	415	414.2	402.5	410.6
30	318,3	310	316.7	315	369.2	356.7	343	356.3	408.3	411.7	390	403.3
31	341.7	344.2	360	348.6	355	374	363.3	364.1	396.7	393.3	395.8	395.3
32	415	415.8	420.8	417.2	406.7	415	415	412.2	436.7	434.2	421.7	430.9
33	369.5	366.7	361.7	365.9	371.7	376	386.7	378.1	401	375	386.7	387.6
34	360	373	365	366	385	399	381.7	388.6	402	412.5	420.8	411.8
36	ı	,		,	,				415	423.3	402	413.4
38	346.7	305	322.5	324.7	367	335	356.7	352.9	403.3	397.5	401	400.6
39	370.8	345	363.3	359.7	383	367.5	371.7	374	417.5	400	415	410.8



FREQUENCY VARIATION AT 0 PSI DURING 25K FT ALTITUDE ENVIRONMENT, REFERENCE TASK F-15-3

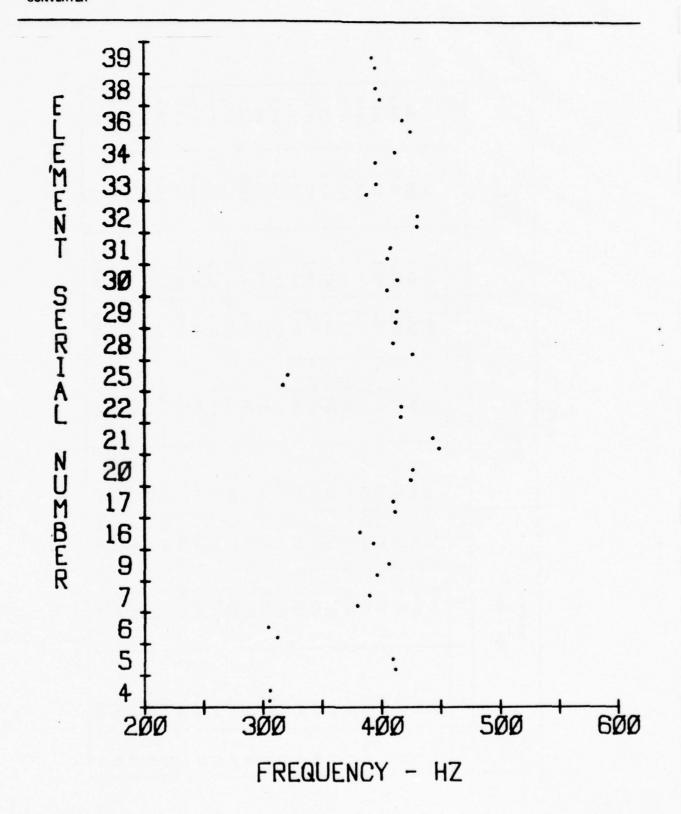


FREQUENCY VARIATION AT +0 PSI DURING 10K FT ALTITUDE ENVIRONMENT, REFERENCE TASK F-15-4

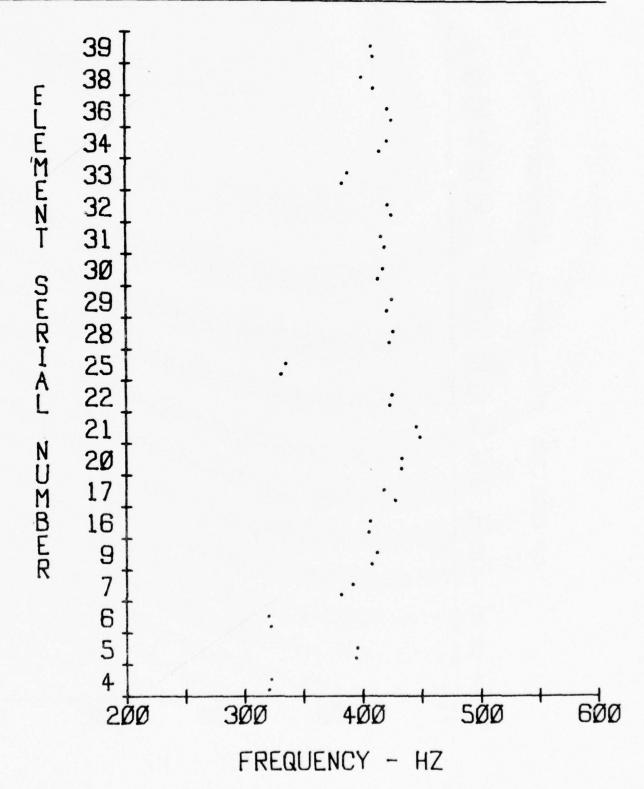


FREQUENCY VARIATION AT 0 PSI DURING BASELINE TESTING AFTER ALTITUDE ENVIRONMENT, REFERENCE TASK F-16

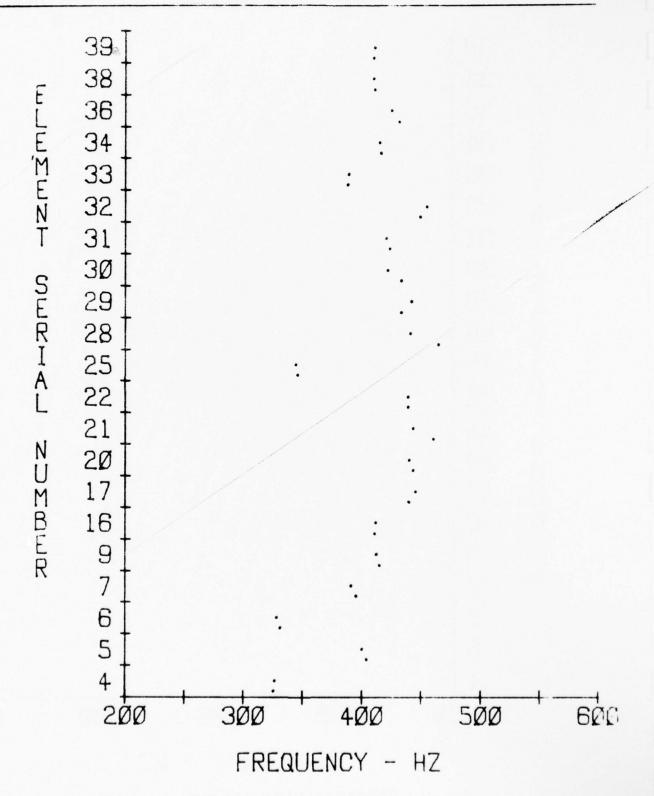
		AVG	325.5	402.1	329.6	393.3	413.8	411.3	445.9	441.7	452.1	439.2	345	452.9	437.9	427.5	452.4	452.5	388.8	415.9	478.4	410.4	410.5
	Baseline E-2-3 3124 - 3228	2	326	400	328.3	390.8	412.5	411.7	445.8	440	443.3	439.2	344.2	440.8	442.5	421.7	420.8	455	389.2	415	425	410	114
	312	-	325	404.2	330.8	395.8	415	410.8	440	443.3	460.8	439.2	345.8	465	433.3	433.3	424	450	388.3	416.7	431.7	410.8	410
		AVG	320.9	394.6	320.9	386.7	410.4	405.9	423.3	433.3	4.7.4	424.2	332.9	424.7	422.9	415.4	417.7	423.4	385.8	418.4	423.4	405	409.2
0 PSI	11ne -2 3123	2	321.7	395	320	391.7	412.5	406.7	418.3	433.3	445.8	425	335	426	425	417.5	416.2	421.7	388.3	421.7	421.7	400	408.3
	Baseline E-2-2 3019 - 3123	1	320	394.2	321.7	381.7	408.3	405	428.3	433.3	449	423.3	330.8	423.3	420.8	413.3	419.2	425	383.3	415	425	410	410
		AVG	305.4	410.5	309.9	385	401.7	387.5	410.9	425.9	446.2	416.7	318.8	418.4	412.9	409.6	407.1	430.8	392.5	404.2	421.7	397.3	393.8
	Baseline E-2-1 2907 - 3018	2	305.8	409.2	304.2	390	406.7	381.7	410	426.7	443.3	416.7	320.8	410	413.3	414.2	408.3	430.8	396.7	412.5	418.3	395.5	392.5
	53	1	305	411.7	311.7	380	396.7	393.3	411.7	425	449	416.7	316.7	426.7	412.5	405	405.8	430.8	388.3	395.8	425	399	395
	Freq.	S/N	4	5	9	7	6	16	17	50	21	22	25	28	59	30	31	32	33	34	36	38	39



FREQUENCY VARIATION AT 0 PSI DURING FIRST STEP PULSE BASELINE TEST, REFERENCE TASK E-2-1

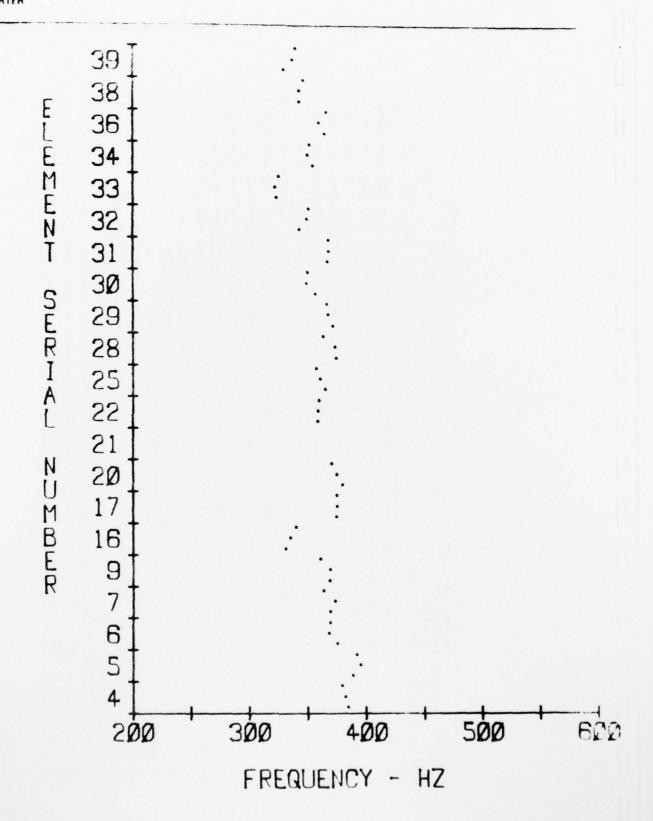


FREQUENCY VARIATION AT 0 PSI DURING SECOND STEP PULSE BASELINE TEST, REFERENCE TASK E-2-2

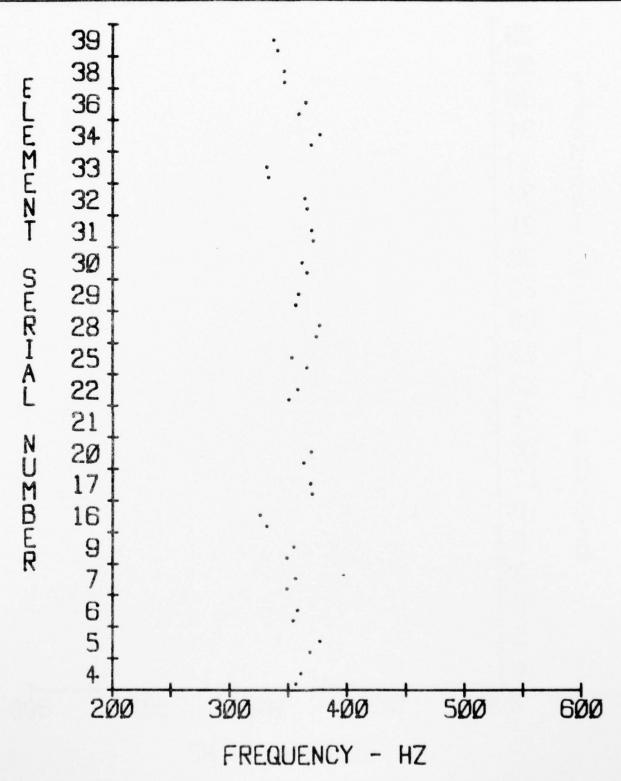


FREQUENCY VARIATION AT 0 PSI DURING THIRD STEP PULSE BASELINE TEST, REFERENCE TASK E-2-3

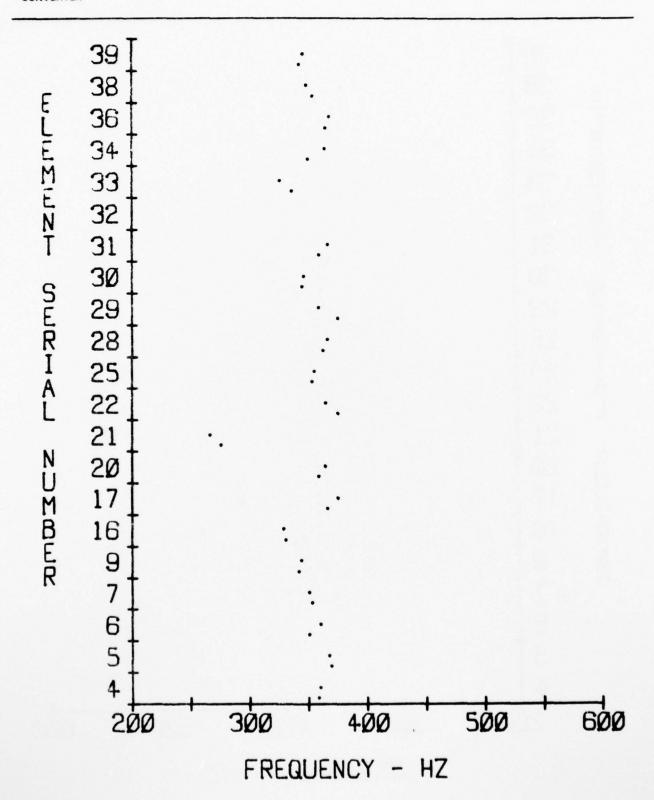
	1ST TEST		FTER	PRE	SSUR	PRESSURE (D)		SCHMITT TRIGGER	œ ·	BASELINE	lu!	BASELINE	INE	BASEL INE	ELINE	BASELINE	ELINE E.3	83	BASELINE	ш	
PSI	25.0		604	9	605 966	9	1009	1050	1093	3	155	1156 -	1260	1272	- 1376	1377	- 1481		1482 - 1	1544	
N/S	_	2	3			2	-	2	-	2	3	-	2	-	2	-	2		2	3	AVG
4	384.2	381.7	379.	2 355	00	360	357.5	359.2	360.8	358.3	359.2	355	348.3	362.5	363.3	340	339.2	344.2	344.2	356.7	358.4
10	389.2	395	391.7		368.3 3	376.7	369.2	366.7		365.8 369.2		370.8 357.9 360.8	360.8	370.8	378.3	378.3 352.5	360	365.8	365.8 365.8 365.8	365.8	370.5
-	375	368.3	369.	2 353.	m	357.1	350	360	354.2 353.	353.3	355	355.8	345	365	359.2	347.5	344.2	344.2	350	345.8	355.4
1	369.2	373.3	363.3	3 348	m	355.8	352.5	350	347.5 350	350	341.7	341.7 342.5 335.8 350	335.8	350	350	337.5	343.3	342.5	343.3 342.5 340.8	331.7	348.7
0	369.2	369.2	360.	8 348	3	354.2	340.8	343.3	339.5	342.5	344.2	335.8	337.5	337.5 343.3	345.8	335.8	330.8	330.8 339.2	332.9	337.5	344.8
91	330.8	335	340	336	330.8 3	325	330	328.3	330.8	330.8	328.3 330.8 330.8 324.5 325		325	337.5 330	330	328.3	328.3 321.5 326.7 321.7 320	326.7	321.7	320	328.8
	375	375	375	370		368.3	366.3	375	335.8	335.8 342.1	341.7	341.7 360.4	363.3	375.8	382.5		362.5 366.7	364.5	364.5 356.7	355.8	363.8
	380	375	370.	8 362.	w	369.2	358.3	364.2	363.3	360.8	364.2	364.2 363.3 360.8 364.2 360.8 365	365	370.8	370.8 369.2		373.3 366.7 365	365	365	362.5	366.7
	,	,	,			*	275	265.8	244.2	252.5	265.8 244.2 252.5 242.5	381.7	387.5	386.7	385.8	387.5	392.5	392.5 384.2	380.8	376.7	384.
22	359.2	359.2	360	350		357.9	375	364.2 355	355	355.8	355.8	355.8 355.8 364.2 359.2 366.7 359.2 368.3 362.5 362.5 359.2 365.8	359.2	366.7	359.2	368.3	362.5	362.5	359.2	365.8	361
25	365	360.8	357.	5 365	00	352.5	352.5	354.	2 355.8	350	351.7	350	352.5	352.5 354.6	350	355.8	355.8 343.3 350	350	343.3	350	353.4
28	375	374	363.3	3 374		376	362.5	365.	8 374.2 370	370	363.3	363.3 367.5 359.2 369.2	359.2	369.2	368.3		367.5 366.7 363.3 367.5	363.3	367.5	365	368
58	372.5	367.5	366.	7 355	00	358.3	375	358.3	370.8	360.8	371.7	361.7	359.2	360.8	356.7	354.2	356.7	372.5	375	369.2	364.4
	356.7	349	350	365	365.8 3	360.8	344.2	345.8		348.3 345.8	349	350.8 345.8	345.8	340	340	344.2	344.2 343.3 360	360	355.8	351.7	349.8
	367.5	368.3	368.	3	370.8 3	369.2	359.2	366.7	365.8	369.2	373.3	353.3 354.2 360.8	354.2	360.8	361.7	355	355	369.2	370	370	364.6
-	343.3	350	351	365		363.3	,	,	377.5 376	376	370.8	'	,	350	355.8	•	,	,	,	'	360.3
	323.3	322.5	325	332	2	330.8	335.8	325	345.8	332.9	340	319.5	319.2 320.8	325	318.3 325	325	322.5	322.5 330.8	333.3	335	328.6
	355	350	351.7		369.2 3	376.7	350	364.2	365	367.5	374	348.3 343.3 350	343.3	350	347.5	351.7	350	365	358.3	350	357.2
	365	360	366.7	-	358.3 3	364.2	364.2	367.5 377.5	377.5	387.5	375	360	357.5	357.5 359.2	364.2	364.2	355.8	355.8 378.3	375	369.5	366.8
	343.3	343.3	346.7		345.8 3	345.8	353.3	348.3	354.2	357.5	352.5	348.3 354.2 357.5 352.5 341.7 350	350	344.2	344.2 344.2	340	345.8	349.2	345.8 349.2 348.3 355.8	355.8	347.9
39	330	337.5	340	340		136.7	336.7 341.7	345	341.7	345.8	355.8	341.7 345.8 355.8 333.8 334.2 336.7 335.8 330	334.2	336.7	335.8	330	337.5	340.8	337.5 340.8 343.3 341.7 339.4	341.7	339.



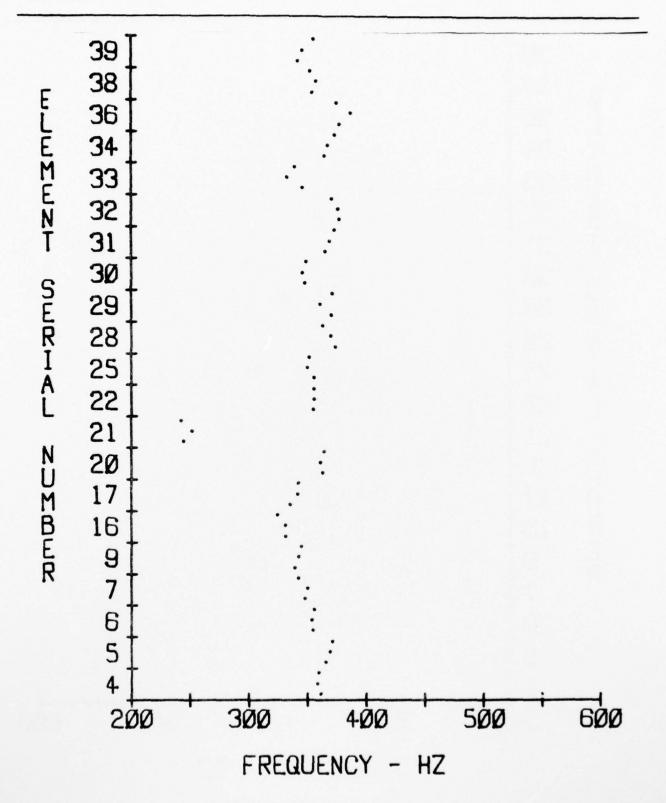
FREQUENCY VARIATION AT -5 PSI. FIRST BASELINE AFTER ENVIRONMENTAL CHAMBER TUNING, REFERENCE TASK C



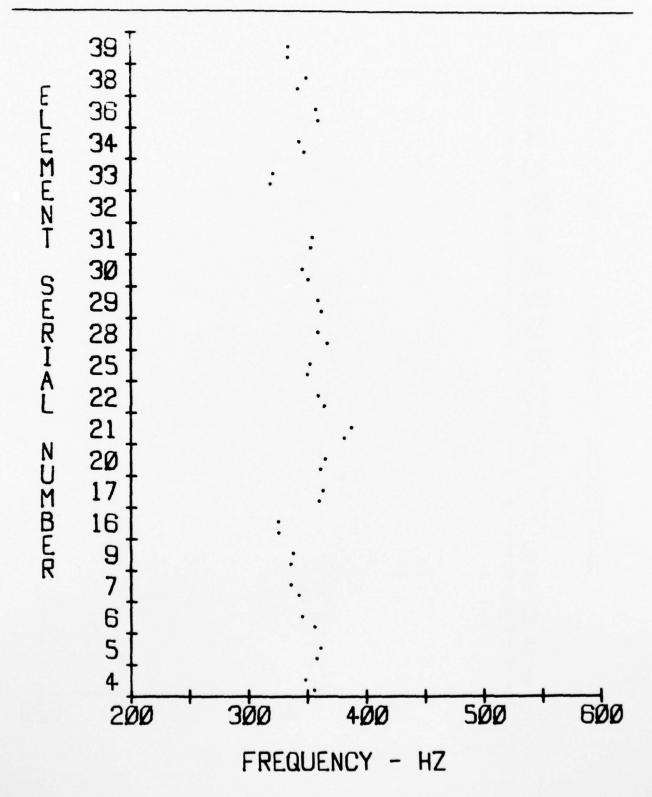
FREQUENCY VARIATION AT -5PSI DURING VARIANCE IN SUPPLY PRESSURE TEST. (THIS DATA AT A SUPPLY PRESSURE OF 40PSI) REFERENCE TASK D



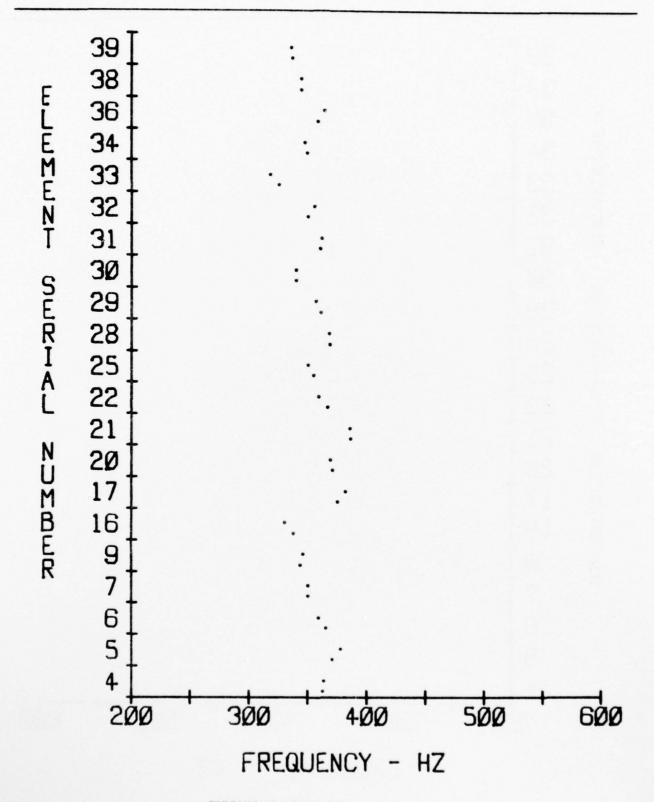
FREQUENCY VARIATION -5PSI DURING SCHMITT TRIGGER TEST. REFERENCE TASK D



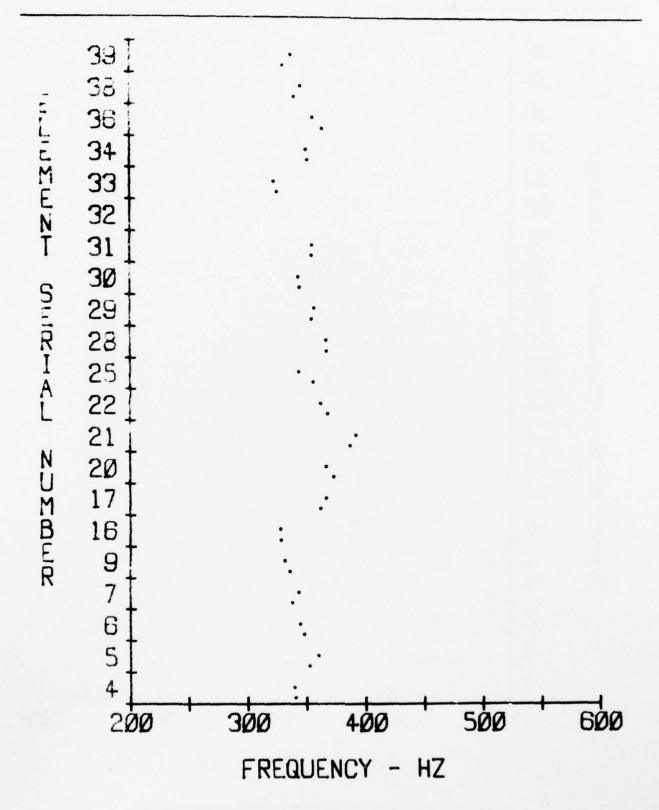
FREQUENCY VARIATION AT -5PSI BASELINE TEST PRIOR TO STEP PULSING, REFERENCE TASK D



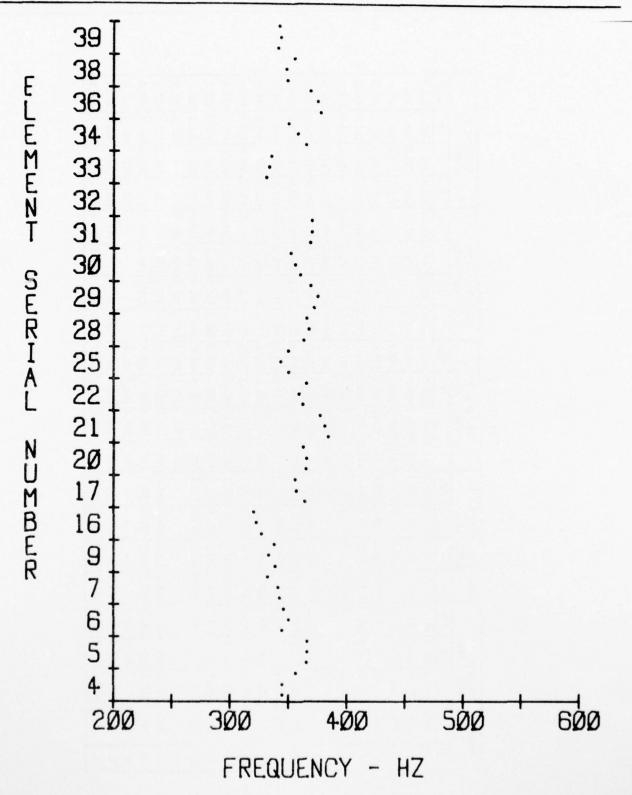
FREQUENCY VARIATION AT -5PSI DURING FIRST STEP PULSE BASELINE TEST, REFERENCE TASK E-1



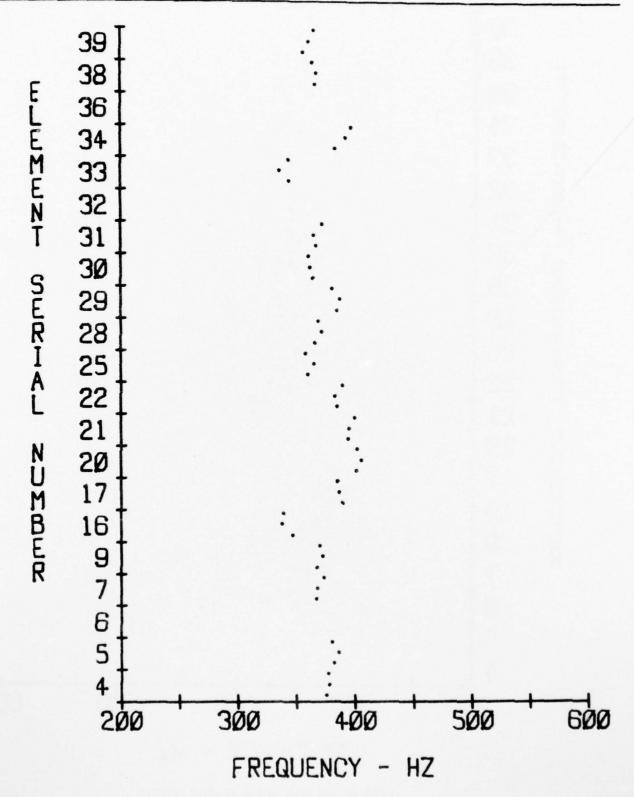
FREQUENCY VARIATION AT -5PSI DURING SECOND STEP PULSE BASELINE TEST, REFERENCE TASK E-2



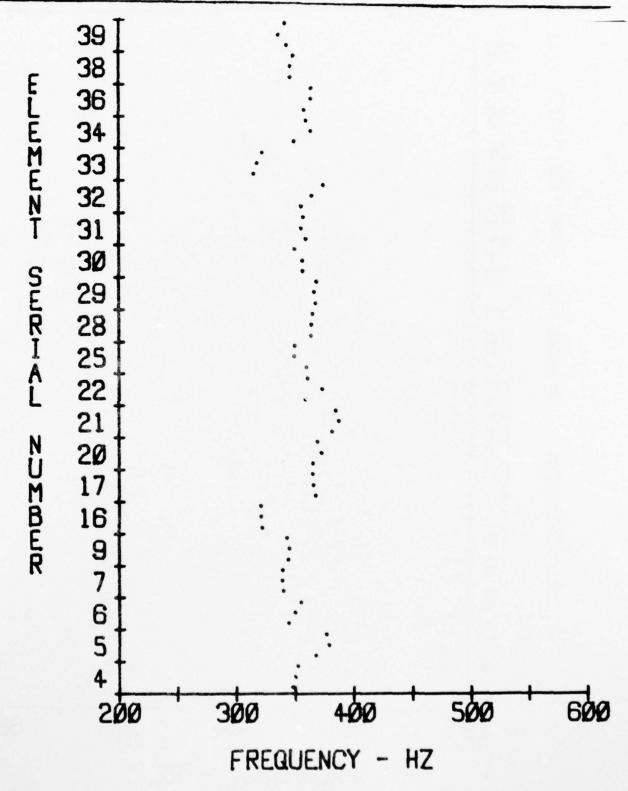
FREQUENCY VARIATION AT -5PSI DURING THIRD STEP PULSE BASELINE TEST, REFERENCE TASK E-3



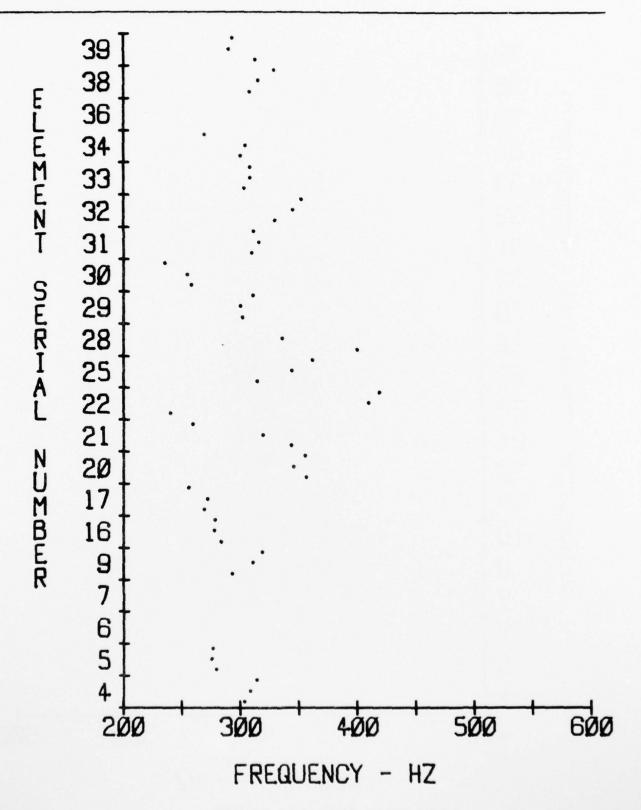
FREQUENCY VARIATION AT -5PSI DURING BASELINE TEST PRIOR TO HIGH TEMPERATURE ENVIRONMENT: REFERENCE TASK F-1



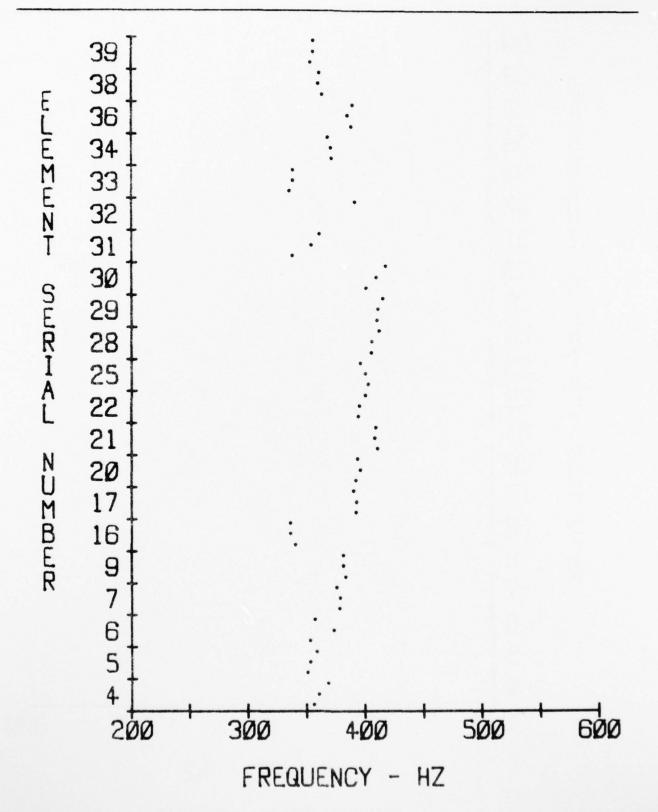
FREQUENCY VARIATION AT -5PSI DURING HIGH TEMPERATURE (+145°F) ENVIRONMENT REFERENCE TASK F-2



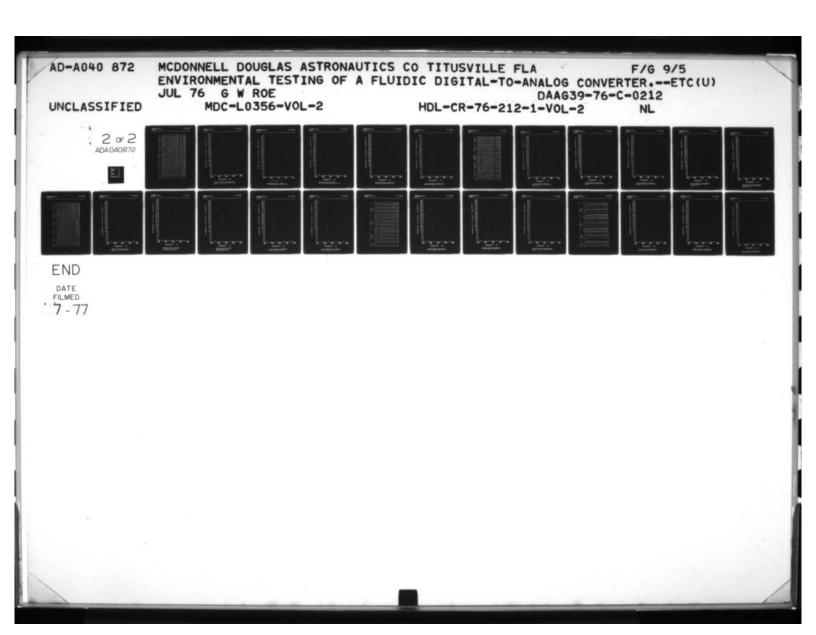
FREQUENCY VARIATION AT -5PSI DURING BASELINE TEST PRIOR TO LOW TEMPERATURE ENVIRONMENT: REFERENCE TASK F-3

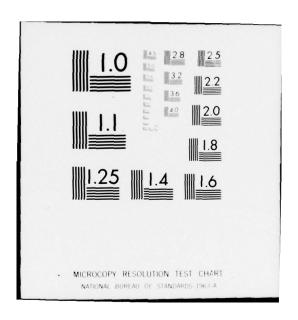


FREQUENCY VARIATION AT -5PSI DURING LOW TEMPERATURE (-40°F) ENVIRONMENT REFERENCE TASK F-4



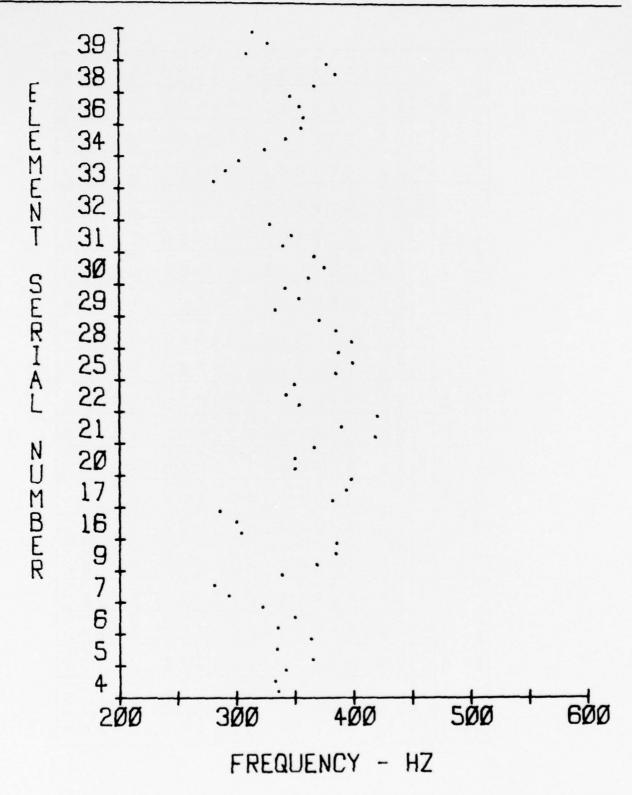
FREQUENCY VARIATION AT -5PSI DURING BASELINE TEST USING N₂ (AFTER LOW TEMPERATURE TESTING) REFERENCE TASK F-5



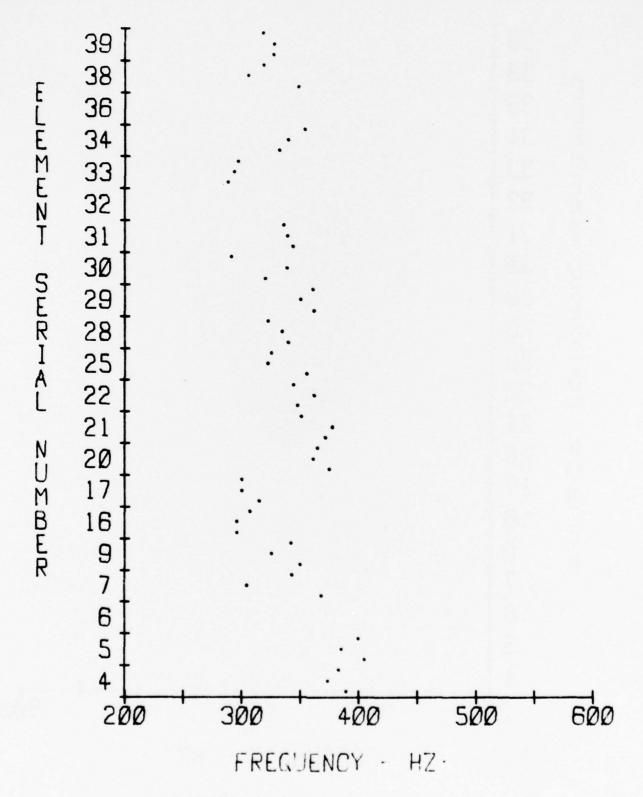


_					-																			
4			AVG	343.6	352.5		327.9	335.6	294.4	321.3	359.8	363.5	342.5	334.7	333	8 345.4	290.5	328.2		281	325	,	307.4	298.3
ACCELERATION F-7-4	S	5099	3	345.8	354.2		331.7	331.7	308.3 287.5	349	366.2	364.5	345	338.3	300	335.8	290.8 290.5	332.2	,	286.3 281.7 281	319.2	,	285	315.8 291.7 298.3
ATIC	+3 AXIS								£.		2			.5		346.2 335.			-	.3			8.	8.
ELER	+3	2043 -	2	331.7	338.3	'	312	346.7		300	352.	359.2	339.2	322.5	350	346	290	322.5	'	586	341.7	'	318.8	315
ACC			-	324.4 353.3	365		340	333.6 328.3	293.6 287.5	315	363.7 360.8	366.7	343.3	330.8 327.1 343.3	349	354.2 349.2 354.2	314.7 290.8	30	,	375	346.2 314.2	•	326.7 326.6 318.3	305.8 287.5
			AVG	4.4	342.5		335.6 340	3.6	3.6	316.7 315	3.7	330.8	343.3		319.6 349	9.5	4.7	333.6 330	_	291.7 275	5.2		9.6	5.8
-7-3			A	3 32			33	33	7 29	3	7 36	3 33	2 34	8 32	7 31	2 34	7 31	7 33		2 29	3	_	7 32	30
ION F	KIS	2042	8	323.3	354.2	,	333	326	281.7	325	363.7	363.3	339.2		333.7		316.7	326.7	'	294.2	350	•	326.	318.3
ACCELERATION F-7-3	-3 AXIS	- 9861	2	325	338.3	ı	292.5	344.5	310	325	356.7	304.2	355	331.3	300	347.5	300	345		287.5	351		323	588
ACCEL		15	-					0.3			370.8		335.8	319.2			327.5		_	3.3		_		
-				9 325	346.1 335		318.3 344.2	337.8 330.3	298.4 289.2	3 300	7 37	2 325	4 33	9 31	2 325	3 34	6 32	331.8 329.2		2 29	345.5 337.5	_	8 330	30
2-2			AVG	341.9	346.	•		337.	298.	340.3	359.	367.	346.	336.9	334.2	354.	353.6	331.	•	292.	345.	'	325.8	315
ACCELERATION F-7-2	S	985	3	354.2	352.5	,	305.8	30	301	344.2 331.7	359.2 363.3 359.7	354.2 369.2 367.2	5 343.3 346.4	349	3 331.7	354.2 354.3 345.8	342.5 393.3	325	,	291.7 292.2 293.3	337.2		011	315
RATIC	-1 AXIS	1929 - 1985	2		329.2	,	339.5	353.3 330		4.2	9.2	4.2	2.5		333.3		2.5	342.5	,	0.8			339.2 310	
CELE	,	192		7 340			33	35	2 305	34	7 35	3 35	3 352.	7 330		8 350	34		-	2 2	2 345		33	305
AC			-	331.7	356.7	'	310	330	289.	345	356.	378.3	343.	331.	337.	358.	325	327.	1.	294	354.	•	328.	325
-			AVG	381.9	396.8		343.3 338.5	339.2 330	307.2 299.6 289.2	305	364.7 366.8 356.7	366.7	351.4 343.3	334.2 331.7	322.5 332.2 337.5	360.8 357.5 358.8	290.8 316.7 325	339.2 335.8 339.7 327.8	,	292.7	354.2 342.2 354.2	,	319.2 324.2 328.3	317.5 324.3 325
ACCELERATION F-7-1		1928	3	383.3		,	3.3	342.5	17.2	300	4.7		344.2		5.2	8.0	8.0	8.3	ı	1.9	4.2	,	9.5	7.5
ATTON	+1 AXIS		_	38	.3 400				8.	3(.5 351	. 5 34	321.7 325	.2 33			.2		.3		_		.8
ELER	Ŧ	1872	2	373.3	385.3	1	304.2	325	8.562	300	360.8	377.5	362.5		334.2	350	339.2		'	293	340	'	305	327
ACC			-	389.2	405	•	368	350	295.8	315	375	371.7	347.5	355.8	340	141.7 343.1 361.7	320	344.2	,	303.3 291.9 288.3 293.3 296.7 292.7 294.2 290.8	332.5	•	348.3	317.1 327.5 327.8
			AVG	336.4		35.6	304.4	379.7	85.8 296.7	391.7	66.7 355.6	410	348.6	387.5 390.8	370.8 384.9	13.1	366.7 368.4	329.2 339.2	,	9.16	356.7 341.7	53.1	378.3 377.3	17.1
F-6		11		41.7 3	363.7 354.3	21.7 335.6			.8	3	.7 35			. 5 39	. 8 38	.7 34	. 7 36	.2 3.		. 3 29	.7 34	346.7 353.1	.3	314.2 3
L		- 1871	3	3		321	339.5	385	285	398.	366	420.8	350	387	370	(4)	366		'	303			_	.,
BASELIN		1809	2	332.5	334.2	350	280.8	385	300	394.2	350	390	342.5	400	385	354.2	5 376	348.3	•	291.7	343.3	354.2	385.8	327.8
			-	335	365	335	293.3	369.2	304.2	382.5	350	419.2	353.3	385	399	333.3 354	362.5	340	,	280.8	325	358.3 354.2	367.5 385.8	309.2 327.8
FREQ	A S	PSI	8/11	4	5	9	1	6	91	17	50	12	22	25	28	59	30	31	32	33	34	36	38	39

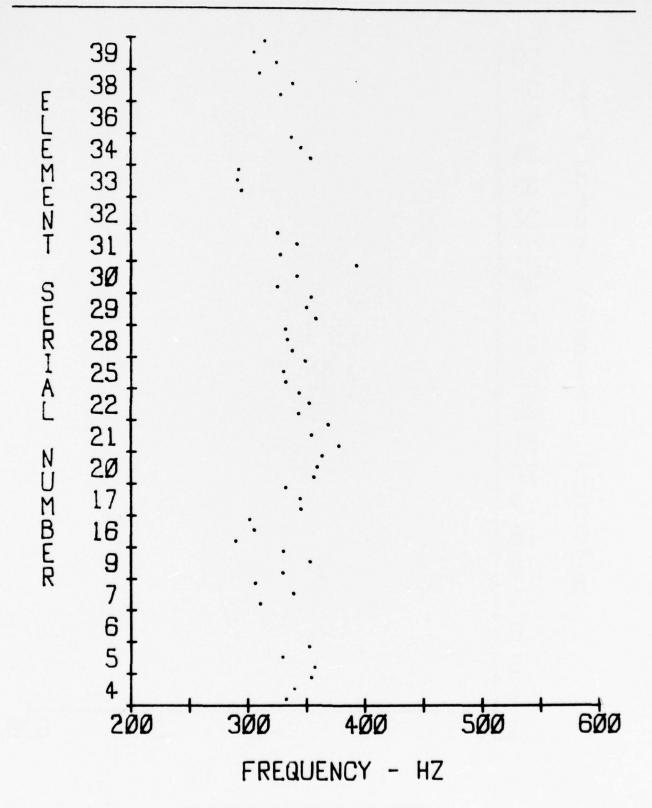
-5 PSI



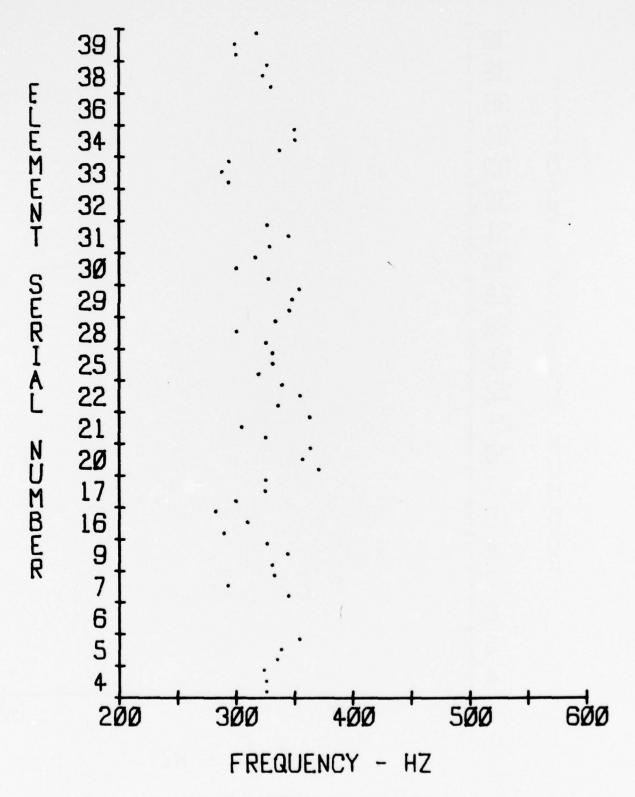
FREQUENCY VARIATION AT -5 PSI DURING BASELINE TEST PRIOR TO ACCELERATION ENVIRONMENT. REFERENCE TASK F-6.



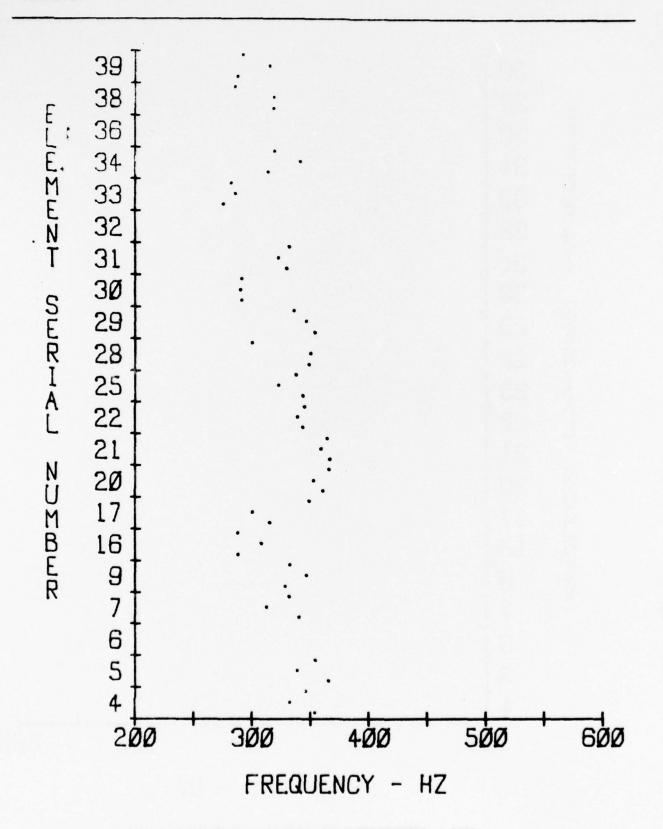
FREQUENCY VARIATION AT -5 PSI DURING +1 AXIS ACCELERATION ENVIRONMENT, REFERENCE TASK F-7-1.



FREQUENCY VARIATION AT -5 PSI DURING -1
AXIS ACCELERATION ENVIRONMENT, REFERENCE TASK F-7-2.



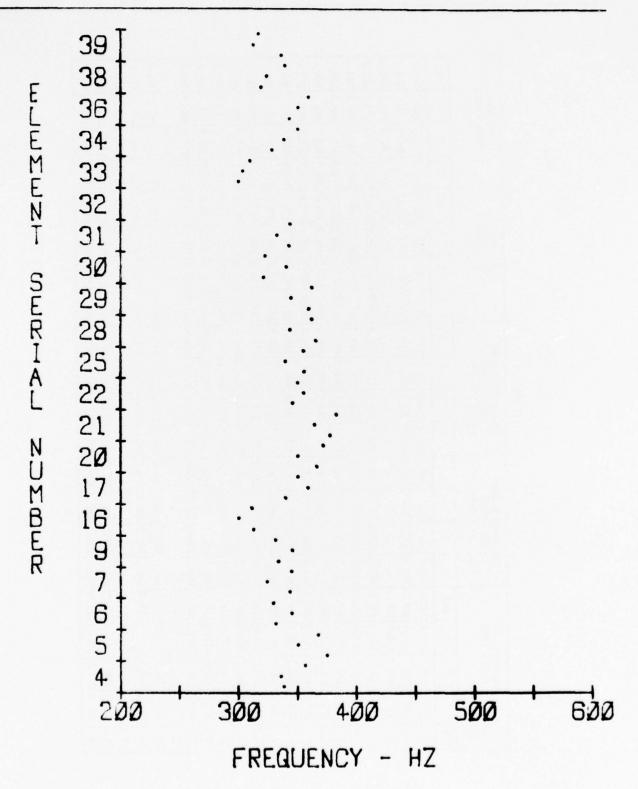
FREQUENCY VARIATION AT -5 PSI DURING -3 AXIS ACCELERATION ENVIRONMENT, REFERENCE TASK F-7-3.



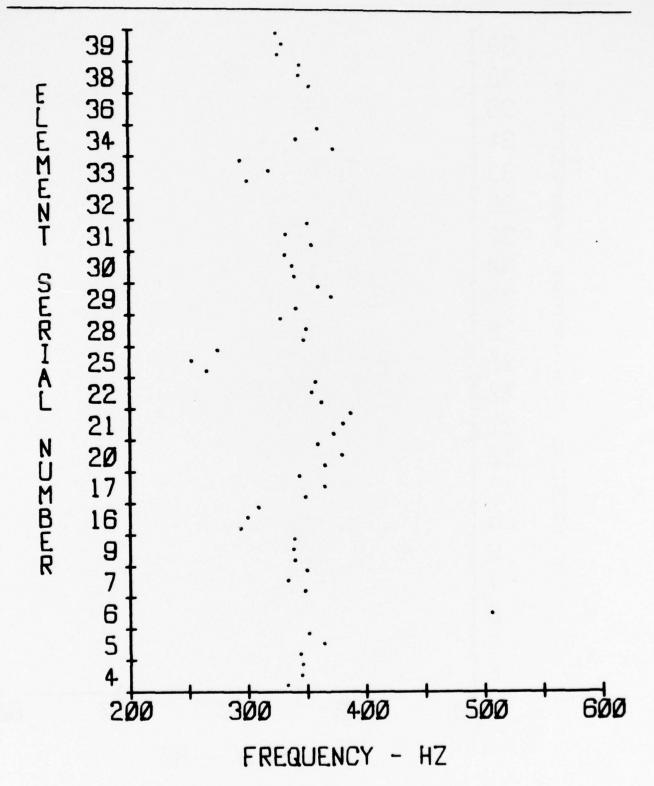
FREQUENCY VARIATION AT -5 PSI DURING +3 AXIS ACCELERATION ENVIRONMENT, REFERENCE TASK F-7-4.

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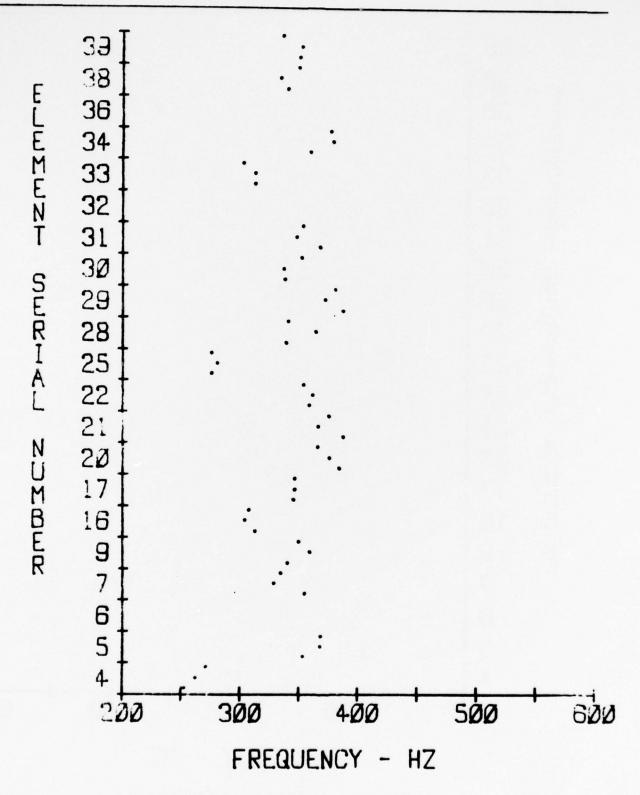
	AVG	268.1	358.6	342.8	32.2	4.1	309.2	355.6	313.9	368.6	354.2	67.2	351.4	345.8	32.8	341.6		304.2	333.6	344.5	332.2	322.8
Baseline 2370 - 2552 F-11	3	266.7 2		4.2 3	336.2 324.2 336.3 332.2	340.8 341.4	306.7 3		311.7 3	_	357.5 3	268.3 268.3 267.2		2.5 3	335.8 329.2 333.3 332.8	5.8		305.8 301.7 3	7.5 3	4.2 3		321.7 33
Baseline 70 - 255 F-11			7 36	5 34	2 33		8	355		5 370	35	3 26	350	8 34	2 33	8 34		8 30	3 33	7 34	3 32	32
237	2	271.	356.	342.	324.	341.	310	355	315.8	372.	355	268.	350	345.8 342.5	329.	340.8 345.8	•	305.	328.3 337.5	346.	333.3 324	325
	-	265.8 271.7	359.2	341.7 342.5 344.2	336.2	341.7 341.7	310.8 310	356.7	314.2	363.3 372.5	350	592	354.2	349	335.8	338.3		305	335	342.5 346.7 344.2	339.5	321.7
	AVG	7.189	8.098					857.4	370.8	374.9	362.9	273.6 265	354.4 354.2 350	361.8	346.7	357.2		309.7	360			
- 2369 - 2369 10	3	281.7 281.7 281.7	361.7 360.8 359.2 356.7 360	348.3 342.5	343,3 344.2	338.3 341.7 345	305.8 312.2	61.2					8.04		45.8		,	315	350	364.2 363.3 360.8	320.8 330.3	56.7
Baseline 2307 - 236 F-10	2	1.7 2			-	18.3 3		4.2 3	374.7 365.8 371.7 375	376.1 381.7 373.3 369.7	380.8 348	276.7 281.7 284.2 255	8.3 3	354.7 370.8 360	334.2 345.8	345.8 365				4.2 3		7.5 3
23			8 35	344.2 335	2 35	33	8 3	7 34	8 37	7 37		7 28	2 36	7 37	33	8 34		2 31	375	36	350	7 33
		281.	365.	344.	339.	355	320.	366.	365.	381.	360	281.	354.	354.	360	360.	'	304	355	355	320	346.
E	AVG	261.7	363.3	•	338.9	349.4 355	307.2 320.8 310	345.5	374.7	376.1	357.5 360	276.7	347.9	380	342.2	356.4		309.2	371.9	•	341.2 320	345.8
on Rando - 2306 F-9-2	3	8.072	368.3		334.2	349	306.7	345.8	365	375	353.3	275	340.3	380.8 380	352.5	353.3 356.4 360.8		302.5	376.7 371.9		350	335.8
÷ .	2	262.5 270.8 261.7 281.7	868.3		328.3 334.2 338.9 339.2 350	359.2	303.3 306.7	345.8 345.8 345.5 366.7 344.2 361.2 357.4 356.7 355	375		8.098	280	364.2	371.7	336.7	347.5		312.5	379.2		333.7	351.7 335.8 345.8 346.7 337.5 356.7 346.9
Vibrat 2235 Axis l	-	51.7	53.3		54.2				84.2	87.5	58.3		39.5	87.5	37.5	68.3		12.5				-
	AVG	340.8 251.7	352.8 353.3 368.3 368.3 363.3 365.8 355		343.6 354.2	339.2 338.9 340	309.2 300.8 311.7	343.3 352.4 345	359.2 368.3 384.2	387.5 380.5 387.5 365.8	354.2 357.5 358.1 358.3 360.8 353.3	264.2 275	328.3 342.2 339.2 364.2 340.3 347.9 354.2 368.3 340.8	357.8 387.5	338.3 331.7 336.7 337.5 336.7 352.5 342.2 360	332.8 351.7 346.5 368.3 347.5		294.2 304.5 312.5 312.5 302.5 309.2 304.2 310	360.8 358.8 360		347.5 340	327.2 350
Vibration Random 2163 - 2234 Axis 3 F-9-1	3	345 3	351 3			39.2 3	09.2 3	43.3 3	59.2 3	87.5	57.5 3		28.3 3		31.7	51.7	•	94.2 3	60.8		345 3	325 3
ition Ran 3 - 2234 3 F-9-1	2				333.3 350						4.2 3	252.5 275		371.7 360	8.3	12.8 3		319.2	341.7 3	-	14.2 3	
Vibrati 2163 Axis 3		.5 345	.3 36		.5 33	336.6 339.2 338.3	.3 30	365	363.1 365.8 380	373.3 380.8	362.5 35		.3 35	.7 37							327.7 353.3 344.2	.7 33
	_	332.5	343		347	339	293	349	365	373	362	265	348	341	340	355	_	300	3 374	_	7 353	3 326
80	AVG	343.1	7.5 364.2 343.3 364.2	9.2 335	337.6 347.5	336.6	307.5	349.7 349	363.1	33 375	350.4	350.1 265	2.5 357.2 348.3 350	355.5 341.7	2.5 328	340	•	304.4	339.8	351.7	327	6.7 321.8 326.7 330
e F-8	3	356.7	367.5	329.2	345	330.8	311.2 307.9 293.3 300	350	372.5	363.3	350	355.3	362.5	362.5	32	344.2		310	351	360	340	31
Baseline 2100 - 21	2		350			345.8		359.2 350		34.2	355.5	339.2	343.3	344.5	340.8	332.5 34		303.3	339.5	343.3 351.1 360	324	312.5
	-	337.5 335	375	330.8 345	343.7 324	333.3 345.8 33	312.5 300	340	366.7 350	37.5 36.2 38	345.8 355.5	355.8 339.2 35	365.8 343.3 36	359.5 344.5 36	320.8 340.8	343.3 332	•	300	329.2 339.2	343.3	319.2 324	336.3 312.5
Freq.	N/S	4	5	9	_	6	91	17	50	21	22	25	28	58	30	31	32	33	34	36	38	39



FREQUENCY VARIATION AT -5 PSI DURING BASELINE TEST PRIOR TO VIBRATION ENVIRONMENT, REFERENCE TASK F-8

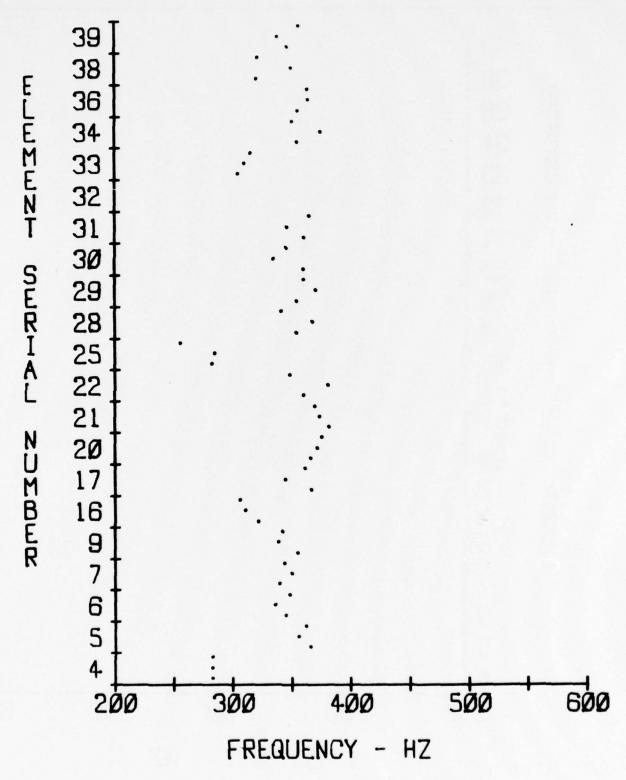


FREQUENCY VARIATION AT -5 PSI DURING AXIS 3 OF RANDOM VIBRATION ENVIRONMENT, REFERENCE TASK F-9-1

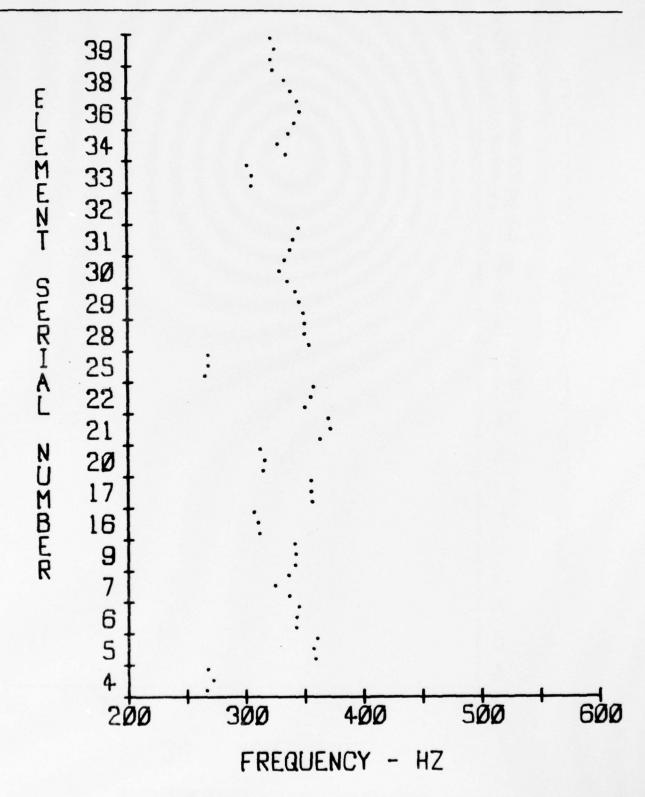


FREQUENCY VARIATION AT -5 PSI DURING AXIS

1 OF RANDOM VIBRATION ENVIRONMENT, REFERENCE
TASK F-9-2



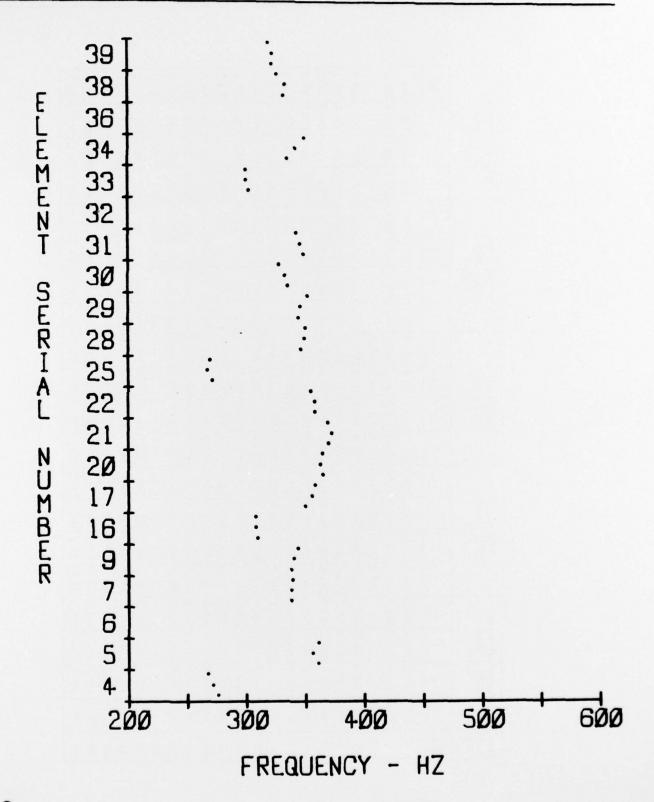
FREQUENCY VARIATION AT -5 PSI DURING BASELINE TEST, AFTER RANDOM VIBRATION ENVIRONMENT REFERENCE TASK F-10



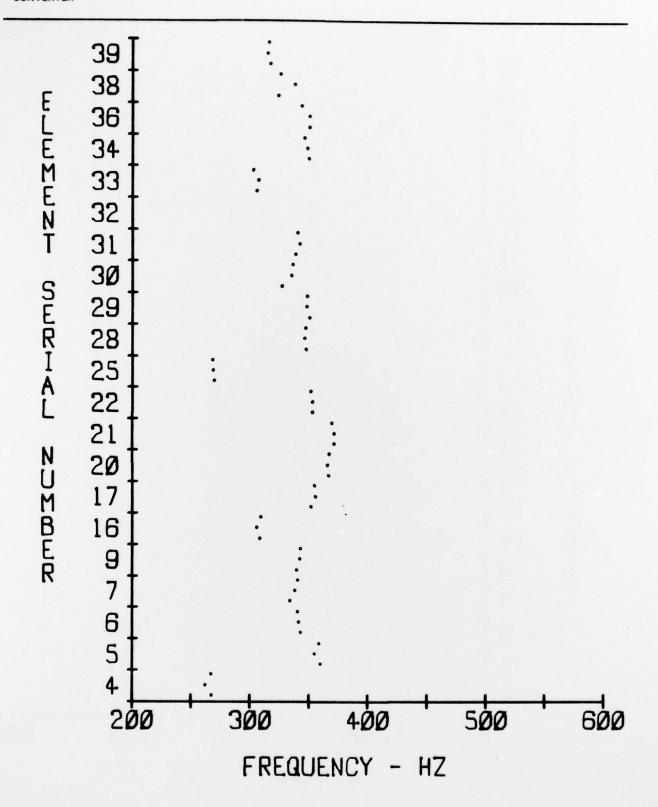
FREQUENCY VARIATION AT -5 PSI DURING BASELINE TEST PRIOR TO ACOUSTICAL NOISE ENVIRONMENT, REFERENCE TASK F-11

1 364.2 346.7 348.3 348.3 304.7 364.5 352.5 350 350 350 340.2 350 340.2 340.2 340.2 340.2 340.2 340.2 340.2 340.2	Av6 1 2 3 AV6 1 270.8 266.7 261.2 266.7 264.9 251.7 359.1 360 354.2 358.3 357.5 364.2 337.9 333.3 337.5 340.8 341.1 346.7 340.3 337.5 340.8 336.9 331.7 340.3 337.5 340.8 330.1 348.3 360.1 307.1 342.5 341.1 348.3 368.1 307.5 368.8 307.1 304.5 368.1 365.7 366.1 364.5 369.2 356.7 366.1 354.2 370.6 370.8 370.3 362.5 356.9 352.5 351 358.8 268.9 269.2 268.3 267.5 268.3 271.7 348.6 346.7 346.7 350.7 366.7 366.7 366.7 347.5 346.3 348.6 364.2 366.7	3 266 340 340 340 354 354 356 366 366 366 366 366 366 366
166.7 - 287.5 287.5 3399.2 3399.2 3399.2 3399.2 339.3 316.7 2241.7 225 226.2 226.2 337.5	6.7 264.9 251. 8.3 357.5 364. 0 341.1 346. 2.5 341.1 348. 8.8 307.1 304. 4.2 353.7 364. 6.7 366.1 354. 9.2 370.3 362. 11 352 358. 7.5 268.3 271. 6.7 346.7 350. 8.3 348.6 364.	270.8 266.7 270.8 266.7 266.7 266.7 266.7 266.7 266.7 266.7 264.9 355.8 360.8 359.1 360 354.2 358.3 357.5 37.5 338.8 337.9 333.3 337.5 340.3 341.1 340.3 340.3 339.2 341.7 342.5 341.1 350.4 343.3 340.3 339.2 341.7 342.5 341.1 350.5 307.5 308.1 307.5 308.3 307.1 342.5 341.1 350.8 354.7 352 355 354.2 353.7 362.5 364.2 366.7 366.1 366.1 372.5 369.2 370.8 370.8 360.2 370.3 358.3 354.2 352.5 351 352 268.3 267.5 268.3 360.7 366.7 368.8 367.5 368.3 366.7 366.1 360.2 268.9
301.7 - 287.5 3309.2 310 335 335 338.3 316.7 241.7 221.7 221.7 323 337.5	8.3 357.5 364. 0 341.1 346. 0 336.9 331. 2.5 341.1 348. 8.8 307.1 304. 4.2 353.7 364. 6.7 366.1 354. 6.7 366.1 354. 7.5 268.3 271. 6.7 346.7 350.	40.8 340 37.5 340 41.7 342 05 308 05 366 65 366 70.8 369 52.5 351 68.3 267
276 287.5 320.8 309.2 316.7 310 335.8 335 331.7 335 331.7 335 332.5 316.7 214.2 241.7 307.5 323 343.3 314.2 256.7 225 200 269.2 326 337.5 305.8 298	341.1 346. 336.9 331. 2.5 341.1 348. 8.8 307.1 304. 4.2 353.7 364. 6.7 366.1 354. 9.2 370.3 362. 1.3 352. 1.7 5 268.3 271. 6.7 346.7 350. 8.3 348.6 364.	00.8 340 11.7 342 11.7 342 15. 308 15. 354 16. 369 16. 369 17. 5 351 18. 3 267 18. 3 348
276 287.5 320.8 309.2 316.7 310 335.8 335 331.7 335 332.5 316.7 214.2 241.7 307.5 323 343.3 314.2 256.7 225 250 226.2 336.8 298	2.5 341.1 348. 8.8 307.1 304. 4.2 353.7 364. 6.7 366.1 354. 9.2 370.3 362. 1 352 358. 7.5 268.3 271. 6.7 346.7 350. 8.3 348.6 364.	77.5 340 11.7 342 15 308 15 354 15 365 16 369 16 369 17 369 18 369 18 367 18 368 18 36
320.8 309.2 316.7 310 335.8 335 331.7 335 331.5 318.3 312.5 316.7 214.2 241.7 307.5 323 343.3 314.2 256.7 225 250 269.2 335.8 298	2.5 341.1 348.88.8 307.1 304.42.2 353.7 364.67 366.1 354.92.2 370.3 362.1 352.1 352.1 352.1 352.2 358.3 358.3 348.6 364.2 323.	11.7 342 308 55 354 55 356 65 366 70.8 369 72.5 351 88.3 267 5.8 346
316.7 310 335.8 335.8 331.7 335 332.3 318.3 312.5 316.7 214.2 241.7 307.5 323 343.3 314.2 256.7 225 200 269.2 326 337.5	8.8 307.1 304. 4.2 353.7 364. 6.7 366.1 354. 9.2 370.3 362. 1 352 358. 7.5 268.3 271. 6.7 346.7 350. 8.3 348.6 364.	5 308 5 354 5 366 0.8 369 2.5 351 8.3 267 5.8 346
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362.5 360.8 368.3 363.9 320 333.3 318.3 358.8 366.7 358.3 361.3 319.2 312.5 316.7 3 271.7 281.7 266.7 273.4 245 214.2 241.7 7 350 347.5 351 349.5 317.5 307.5 323.3 364.2 360 355 359.7 325 343.3 314.2 339.2 358.3 331.7 343.1 250 256.7 225 340 365.8 339.2 348.3 268.3 200 269.2 - - - - 276 326 337.5 312.5 311.7 318.3 314.2 289.2 305.8 298	9.2 370.3 362. 1 352 358. 7.5 268.3 271. 6.7 346.7 350 8.3 348.6 364.	. 8 369 . 5 351 . 3 267 . 8 346
358.8 366.7 358.3 361.3 319.2 312.5 316.7 3 271.7 281.7 266.7 273.4 245 214.2 241.7 2 350 347.5 351 349.5 317.5 307.5 323 3 364.2 360 355 359.7 325 343.3 314.2 3 339.2 358.3 331.7 343.1 250 256.7 255 2 340 365.8 339.2 348.3 268.3 200 269.2 2 - - - - 276 326 337.5 3 312.5 311.7 318.3 314.2 289.2 305.8 298 3	7.5 268.3 271. 6.7 346.7 350 8.3 348.6 364.	5 351 3 267 8 346
271.7 281.7 266.7 273.4 245 214.2 241.7 350 347.5 351 349.5 317.5 307.5 323 3 364.2 360 355 359.7 325 343.3 314.2 3 339.2 358.3 331.7 343.1 250 256.7 255 3 340 365.8 339.2 348.3 268.3 200 269.2 3 - - - - - - 337.5 3 - - - - - - 276 326 337.5 312.5 311.7 318.3 314.2 289.2 305.8 298 5	7.5 268.3 271 6.7 346.7 350 8.3 348.6 364.	3 267 8 346
	6.7 346.7 350 8.3 348.6 364.	8 346
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256.7 320 326 305.8	0 232 6 230	5 348
340 365.8 339.2 348.3 268.3 200 269.2 2	2.0 336.3 339.	335
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312.5 311.7 318.3 314.2 289.2 305.8 298 2	•	-
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343.3 347.8 381.7 401.7 378.3 387.2	3.3 347.8 381.	350 343
325 332.5 335.8 331.1 201.7 187.5 230.8 206.7 260	5 328.9 325	330.3 323.4 338.3 325
324 324 324 324 225 204.2 233.3 220.8 168.3 218.3 244.2 210.3	5 315.3 324	19.2 321.1 316.7 314.2 315

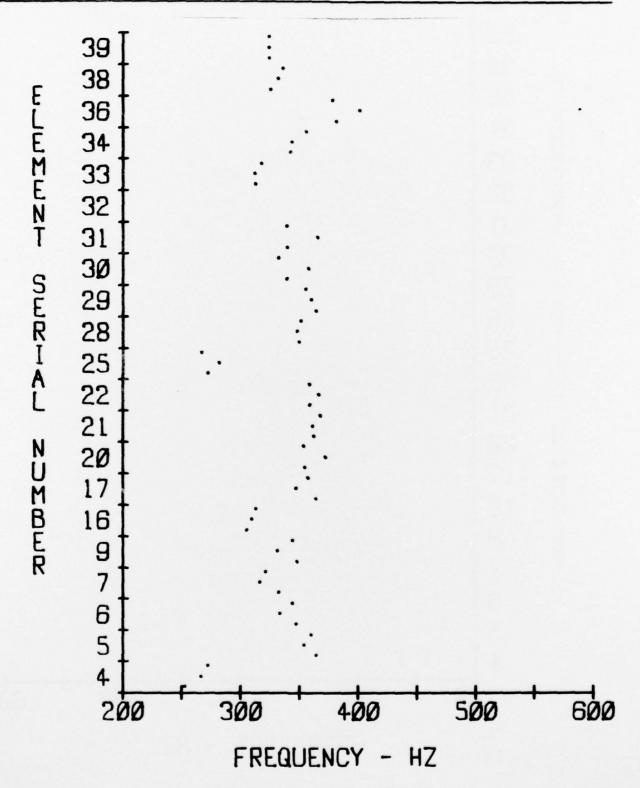
-5 PSI



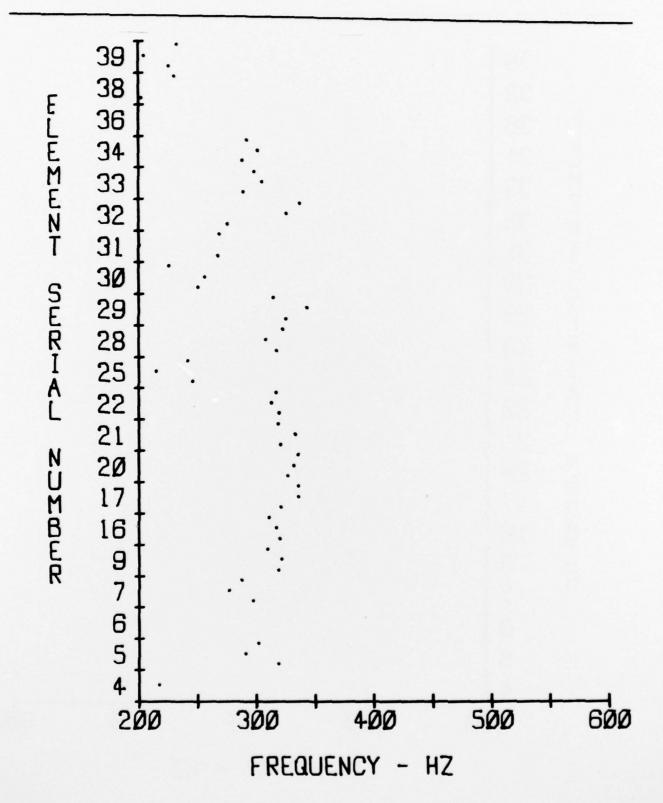
FREQUENCY VARIATION AT -5 PSI DURING ACOUSTICAL NOISE ENVIRONMENT, REFERENCE TASK F-12



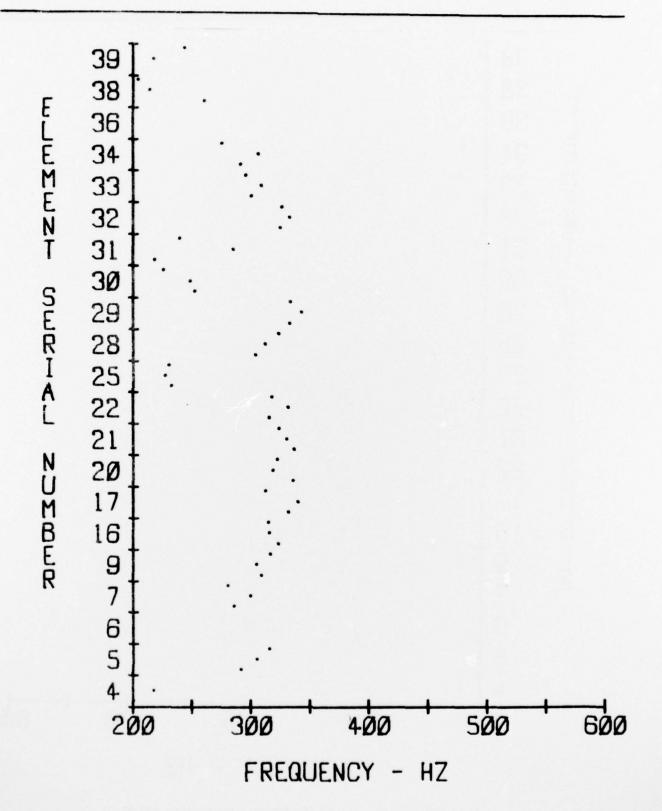
FREQUENCY VARIATION AT -5 PSI DURING BASELINE TEST AFTER ACOUSTICAL NOISE ENVIRONMENT, REFERENCE TASK F-13



FREQUENCY VARIATION AT -5 PSI DURING BASELINE TEST PRIOR TO ALTITUDE ENVIRONMENT, REFERENCE TASK F-14



FREQUENCY VARIATION AT -5 PSI DURING 90K FT ALTITUDE ENVIRONMENT, REFERENCE TASK F-15-1



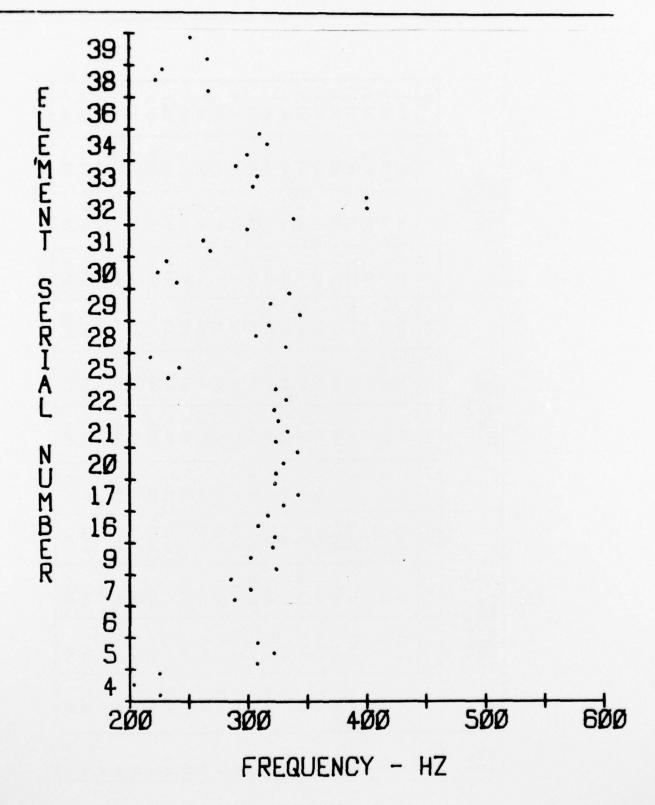
FREQUENCY VARIATION AT -5 PSI. DURING 50K FT ALTITUDE ENVIRONMENT, REFERENCE TASK F-15-2

AVG

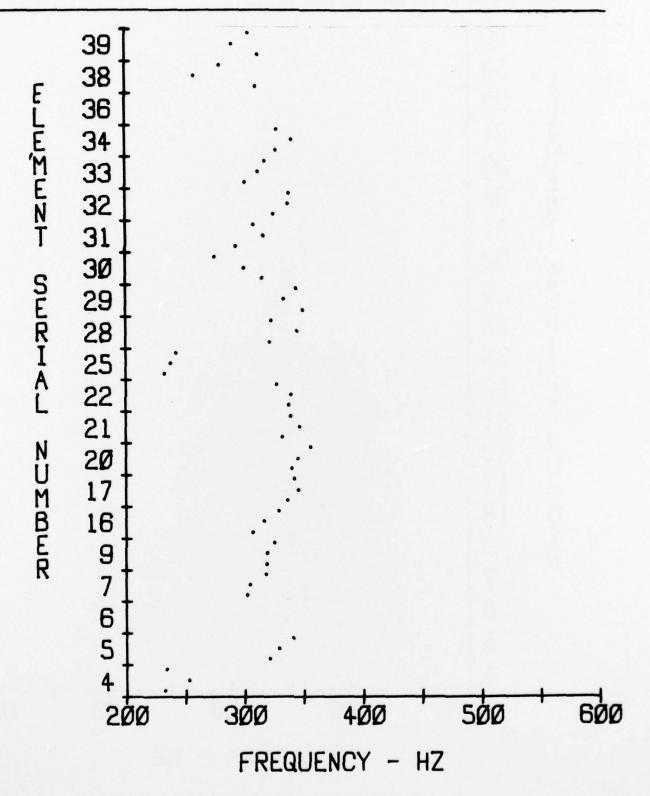
Freq. 0 -5 PSI

	Altitude 25KFT Altitude 10K Baseline 2616 - 2906 2616 - 2906 F-15-3 F-15-4	٣	280.8	358.3	338.7	331.7	350	325	343.3	365	364.2	364.2	247.5	356.7	350	336.7	338.3	403.4	312.5	369.5	348	345	344.2
		2	273.3	345	335	315	350	317.5	362.5	381.7	350	339.2	257.5	354.2	362.5	356.7	340.8	401.7	305	360	366.7	341.7	335
		-	276	356.7	353	337.5	337.5	326	350	375	370.8	350	2.69.2	345.8	362.5	351	340	407.5	323	348	360	350	354.2
		AVG	239.3	330.3		308.1	321	317.5	341.4	347.1	339.2	334.6	237.5	329.8	342.5	296.7	306	333.6	310.6	332.2		282.8	302.2
	10K 2906 4	3	233.3	340.8	•	318.3	325	329.2	341.7	356.3	339.2	327	242.5	323	344.2	275	308	338.3	318.3	328.3		280	304.2
-5 PSI	Altitude 2616 - F-15-	2	253	329.5	•	304.2	319.2	316.7	345.8	345	346.7	339.2	237.5	344.7	333.3	300	316.7	337.5	312.5	340.8		258.3	290
		-	231.7	320.8		301.7	318.8	306.7	336.7	340	331.7	337.5	232.5	321.7	350	315	293.3	325	301	327.5		310	312.5
	iltitude 25KFT 2616 - 2906 F-15-3	AVG	217.8	312.2	•	291.9	315.5	315.8	331.7	331.7	327.2	325.8	230.8	319.2	332.8	231.9	277.2	380.1	300.8	308.9		238.8	239.5
-5 PSI		3	225	307.5	•	285	320.8	316.7	322.5	341.7	325	323.3	217.5	318.3	335	231.7	300	400	290	310		822	251.7
		2	203.3	321.7		302.5	301.7	308.3	342.5	330	333.3	332.5	242.5	306.7	319.2	224	262.5	401	308.3	316.7		7.125	200
		-	522	307.5		288.3	324	322.5	330	323.3	323.3	321.7	232.5	332.5	344.2	240	2.69.2	339.2	304.2	300		266.7	266.7

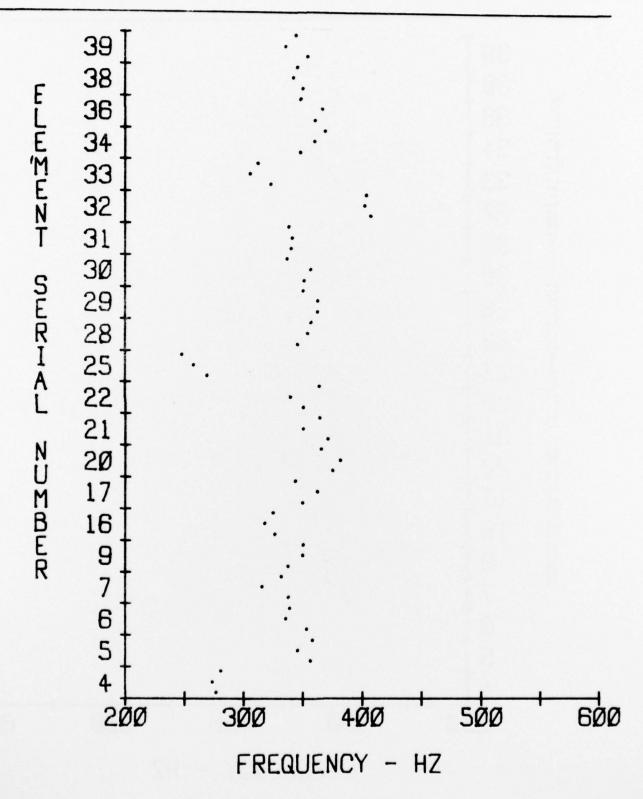
342.2 328.1 345.8 322.8 351.9 351.7 351.1 258.1 352.2 348.1 339.7 404.2 313.5 313.5 348.1 358.3 313.5 348.1 358.1 358.1 358.1 358.1 348.1



FREQUENCY VARIATION AT -5 PSI DURING 25K FT ALTITUDE ENVIRONMENT, REFERENCE TASK F-15-3



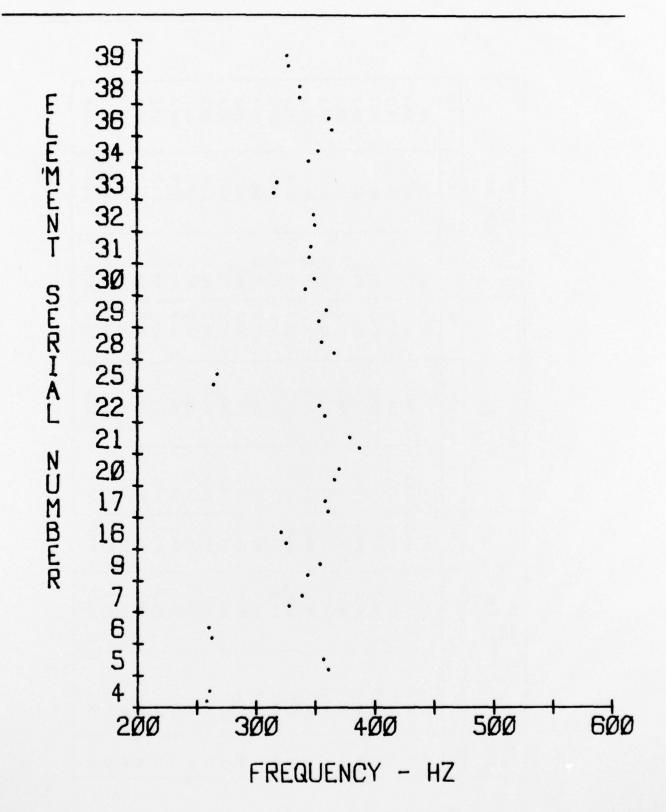
FREQUENCY VARIATION AT -5 PSI DURING 10K FT ALTITUDE ENVIRONMENT, REFERENCE TASK F-15-4



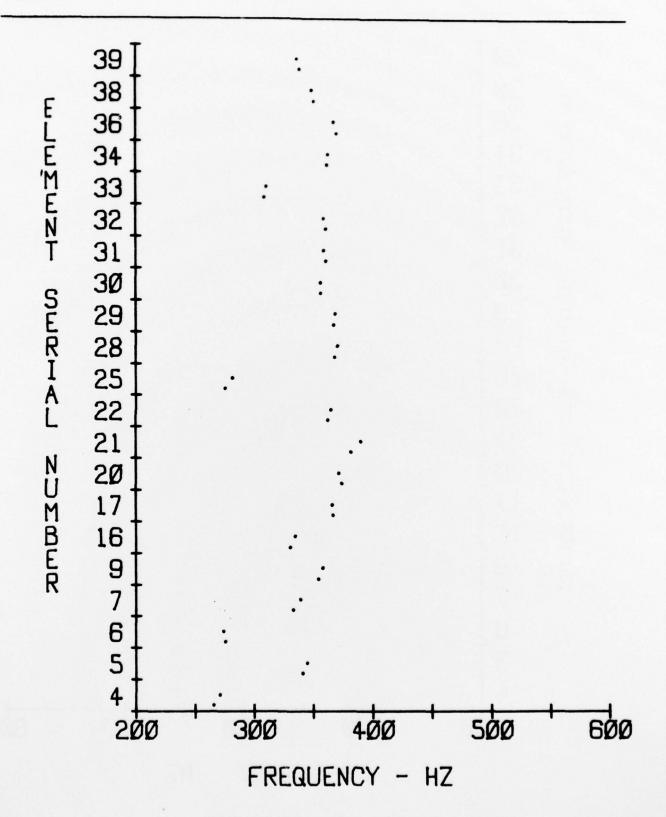
FREQUENCY VARIATION AT -5 PSI DURING BASELINE TESTING AFTER ALTITUDE ENVIRONMENT, REFERENCE TASK F-16

-S PSI

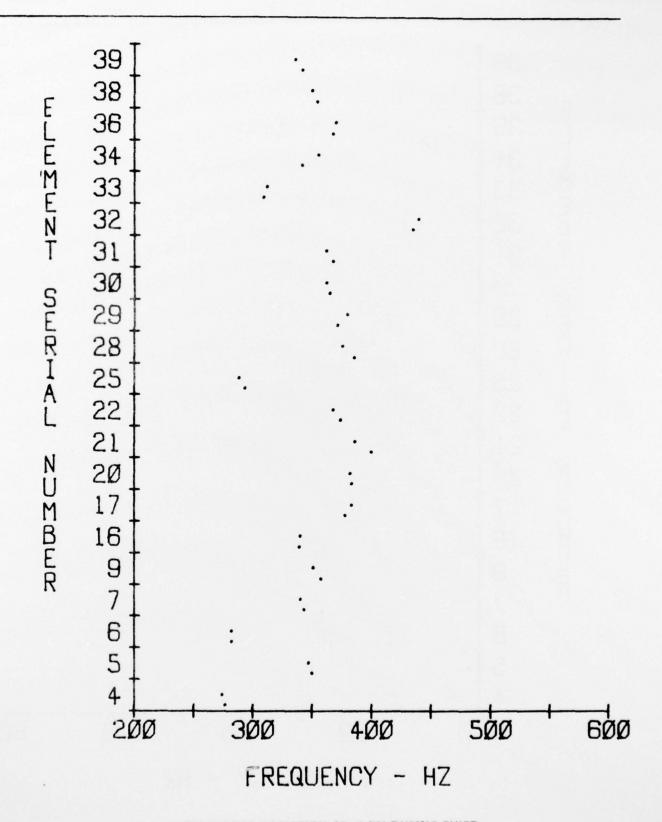
	AVG	275	348.4	281.7	341.7	354.3	339.6	380.8	382.5	392.9	370.8	8.062	380.4	375.4	363.2	365	437.4	310.5	348.8	369.2	352.1	338.8
Baseline E-2-3 3124 - 3228	2 .	274	346.7	281.7	340	351	340	383.3	381.7	385.8	367.5	288.3	375	380	361.7	361.7	439.7	311.7	355.8	370	350	335.8
,,,	-	276	350	281.7	343.3	357.5	339.2	378.3	383.3	004	374	293.3	385.8	370.8	364.7	368.3	435	309.2	341.7	368.3	354.2	341.7
	AVG	267.9	342.5	274.5	336.1	355.9	332.1	366.3	372.4	385.9	362.9	278.4	369.2	367.5	355.8	359.2	359.2	309.5	361.5	368.2	8	337.1
Baseline E-2-2 3019 - 3123	2	270.8	344.2	274	339.2	357.5	334.2	365.8	370.8	390	364.2	281.7	370	368.3	355.8	358.3	358.3	310	361.7	366.7	348	335.8
3018	1	592	340.8	275	333	354.2	330	366.7	374	381.7	361.7	275	368.3	366.7	355.8	360	360	308.3	361.3	369.7	350	338.3
	AVG	259.4	358.8	261.3	333.8	348.8	322.9	359.6	368.4	383.4	355.8	6.592	361.3	356.7	345.9	345.9	349.5	316.7	349.2	363.4	337.5	327.5
Baseline E-2-1 2907 - 3018	2	260.5	356.7	260	339.2	354.2	320.8	358.3	370	379.2	353.3	267.5	355.8	360	350	346.7	349	318.3	353.3	361.7	337.5	326.7
, a	1	258.3	360.8	262.5	328.3	343.3	325	360.8	366.7	387.5	358.3	264.2	366.7	353.3	341.7	345	350	315	345	365	337.5	328.3
Freq.	N/S	4	2	9	7	6	16	17	50	12	22	52	82	53	30	31	32	33	34	36	38	39



FREQUENCY VARIATION AT -5 PSI DURING FIRST STEP PULSE BASELINE TEST, REFERENCE TASK E-2-1



FREQUENCY VARIATION AT -5 PSI DURING SECOND STEP PULSE BASELINE TEST, REFERENCE TASK E-2-2



FREQUENCY VARIATION AT -5 PSI DURING THIRD STEP PULSE BASELINE TEST, REFERENCE TASK E-2-3